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TRANSACTIONS

OF THE

Vermont State Medical Society,

1900.

PUBLISHED BY THE SOCIETY.

D. C. HAWLEY, M. D., Secretary.

Annual Meeting in 1901, at Bellows Falls, October 10th and 11th.

NOTE—Each article published herein stands upon its own merits as the expression of its author's opinion, for which the Society does not hold itself responsible.

BURLINGTON:
FREE PRESS ASSOCIATION,
PRINTERS, BINDERS AND STATIONERS
1901.

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OFFICERS

1900-1901.

W. D. HUNTINGTON, President, Rochester.
E. M. BROWN, Vice-President, Sheldon.
D. C. HAWLEY, Secretary, Burlington.
E. S. ALLBEE, Treasurer, Bellows Falls.
W. L. HAYNES, Auditor, Chester Depot.

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COMMITTEES

EXECUTIVE.

W. D. HUNTINGTON, Rochester,
D. C. HAWLEY, Burlington,
E. R. CAMPBELL, Bellows Falls.

ON PUBLICATION.

D. C. HAWLEY, Burlington, F. R. STODDARD, Shelburne,
S. E. MAYNARD, Burlington.

ON NECROLOGY.

F. L. OSGOOD, Townsend, GEORGE H. FOX, Rutland,
E. B. ELLIS, Poultney.

CATALOGUED
OCT 28 1901
E. H. B.

ON LEGISLATION.

W. N. PLATT, Shoreham, H. D. HOLTON, Brattleboro,
A. B. BISBEE, Montpelier.

BOARD OF LICENSE CENSORS.

H. C. TINKHAM, Burlington, C. W. STROBELL, Rutland,
W. N. PLATT, Shoreham.

ANNIVERSARY CHAIRMAN.

C. S. CAVERLY, Rutland.

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TRANSACTIONS

OF THE

EIGHTY-SEVENTH ANNUAL MEETING

OF THE

Vermont State Medical Society,

HELD IN

Rutland, October 11th and 12th, 1900.

The Society convened in the parlors of the Berwick House, on Thursday, October 11th at 11 o'clock A. M., with the President, Dr. M. R. Crain of Rutland, in the chair.

Prayer was offered by the Rev. Mr. Foster of Rutland:

"Almighty and Everlasting God, from whom we receive all blessings; Thou who art the Great Physician of the Soul and Body; visit with Thy blessing these Thy servants, members of the medical profession, assembled here for intercourse and mutual benefit; grant them knowledge and wisdom in their discussions of subjects regarding their most noble vocation; bless them in their ministrations to the sick; be with them as they deliberate here and give them the means to further the progress of their profession and high calling, that Thy holy name may be honored

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through Thy Son, Who when He was on earth went about doing good. We ask this in the name of our Lord, Jesus Christ.

Our Father, Which art in Heaven, hallowed be Thy name, Thy kingdom come, Thy will be done, on earth as it is in Heaven. Give us this day our daily bread, and forgive us our debts as we forgive our debtors, and lead us not into temptation but deliver us from evil, for Thine is the kingdom, and the power, and the glory, forever, Amen.''

The records of the last meeting were read by the Secretary and approved as read.

The Chair announced the following committees:

Committee on Membership:

H. C. Tinkham of Burlington, W. N. Bryant of Ludlow, and H. S. Manchester of Pawlet.

Committee on Nominations:

E. S. Allbee of Bellows Falls, J. Henry Jackson of Barre, F. R. Stoddard of Shelburne, C. S. Caverly of Rutland, and C. W. Strobell of Rutland.

The Treasurer, Dr. E. S. Allbee of Bellows Falls, presented his annual report, showing a balance of $148.41 in the treasury.

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Treasurer's Report.

Vermont State Medical Society in account with

E. S. ALLBEE, M. D., Treasurer.

1899.	Cr.	
Oct. 13.	By cash on hand	$ 84 24
" 13 and 14.	" received for dues, Burlington meeting	189 00
" 23	" received of committee of arrangements, Burlington	62 00
	" received for dues since Burlington meeting	231 00
		$566 24

1899.	Dr.	
Oct. 14.	To paid D. C. Hawley, salary and cash paid out	$ 81 20
" "	" Free Press, stamps, mailing transactions	19 90
" "	" Peters, for programmes	10 00
" "	" Van Ness House, Richardson and Lockhart bill	8 25
" 24	" for postage stamps	3 00
" 25	" for envelopes	1 75
" 25	" for stamps	1 00
Nov. 6	" for stamps	1 00
" 8	" D.C. Hawley, Miss Farrell $12.93, Peters $6.90, Free Press $3.00	22 83
" 13	" M. H. Richardson, car fare to Burlington	12 00
1900.		

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Jan. 2	"	W. T. Slayton, expenses Legislative Committee	$19 75
Aug. 28	"	C. W. Strobell, expenses as censor	26 75
" 15	"	D. C. Hawley, for Transactions, 1899, and mailing	207 40
Oct. 3	"	Truax & Co., bill heads	2 50
" 3	"	Postage stamps	50
			$417 83
Balance on hand Oct. 11, 1900			$148 41
			$566 24

Respectfully, etc.,

E. S. ALLBEE, M. D., Treasurer.

Dr. D. C. Hawley, Secretary, presented his annual report and the same was accepted, and a committee of three was appointed to take into consideration the recommendations contained therein.

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Secretary's Report.

Mr. President and Members of the Vermont State Medical Society:

Your Secretary has but little of interest or importance to report.

Attention, however, is called to the fact that while an average of 15 to 20 new members is added to our list of members each year, the total enrollment in good standing is increased but little from year to year.

This is explained by the fact that a considerable number fall out every year from non-payment of dues. As a partial remedy, I wish to suggest that more strenuous and business-like methods be adopted in the collection of dues, and that the treasurer be instructed to send bills every 30 or 60 days to all delinquent members until three bills have been sent.

Furthermore, I would recommend that the treasurer be paid 5 per cent. of all money collected, as a partial remuneration for his time and labor.

At the suggestion of your Secretary, a by-law was passed two or three years ago, to the effect that no member should receive the Transactions unless his dues were paid. While this is a just and business-like law, its workings are to my mind unsatisfactory. Members fail to pay up, the same as before, and there are as a result a large number of copies of Transactions in the hands of the Sec-

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retary, which might better be in the hands of the various members. I therefore deem it wiser to distribute the Transactions as formerly, and to collect the dues.

I venture the suggestion that dues against solvent members are collectable, and I believe they should be collected.

Very respectfully submitted,

D. C. HAWLEY, M. D., Sec'y.

The Board of License Censors presented their report, through the chairman, Dr. H. C. Tinkham.

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Report of Board of License Censors.

The Board of License Censors respectfully offer the following report:

During the year there have been held the four regular examinations on the third Wednesdays of October, January, April and July.

There were twenty-six applicants who took these examinations and twenty-one were granted licenses.

The effect that these examinations have had in reducing the number of licenses issued and of bringing *only* well qualified men into the State as practitioners of medicine has been most satisfactory to the Board, and has, we believe, had a decided influence in elevating the medical standing of the State.

It is to be earnestly desired that the Boards of the other societies join in these examinations and that the ultimate result may be the organization of a State Board of Regents by the State, who shall have charge of all medical registration in the State.

Following are the names of the men to whom licenses have been given from Oct. 15th, 1899, to Oct. 15th, 1900:

F. C. Brigham,
J. L. Campbell,
T. H. Canning,
E. P. Cushman,
H. H. Hayward,
T. H. Hack,
H. R. Nye,
L. J. Paris,
A. E. Platt,
A. B. Roberts,
C. J. Rumnell,
W. C. Sears,

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H. R. Kinsman,
C. A. Leach,
F. C. Lagoril,
David Marvin,
N. E. Nichols.
G. H. Towle, Jr.,
P. H. Thompson,
C. L. Wheeler,
E. O. Winship.

Respectfully,
H. C. TINKHAM,
WM. PLATT,
C. W. STROBELL,
Censors of the Vt. State Medical Society.

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Delegates' Report.

Dr. W. N. Bryant of Ludlow reported for the Delegates to Dartmouth Medical College, as follows:

"I was present at the examination, and in the absence of Dr. Stoddard, I think, Dr. Ross answered at a moment's notice and took up the line of work. I presume the methods adopted are familiar to you. The students to be examined were divided between the delegates of New Hampshire and Vermont. The students came before us personally and we were allowed ten minutes with each man in the class, making only five minutes on each topic. I think the number of students appearing was about forty. They were weeded down to about thirty at the examination before the Faculty. Of the thirty who came before us, all were eventually passed, making a very creditable showing. That is about all there is to say about the examinations. I would say a word about the courtesy which was extended us. I was surprised at the kindness with which we were treated, and to note the degree of importance the students placed upon the examinations. I have heretofore been in the habit of regarding the work as so much red tape and formality to be gone through. But it is made by them something more than this, it is of so much importance to them that it makes the matter one worthy of our consideration. The affair passed off very pleasantly and the memory I have of it, of the extreme courtesy with which we were treated, will not soon be for-

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gotten, when I remember the temperature of the day was 143 degrees below zero,—I say this from memory. Another thing: The examining committee who had the students in charge included three men whose aggregate height measured about 18 feet and six inches, and it seemed to me they ought to have impressed any class of students."

An obituary of Lyman Rogers, M. D., of Bennington, was read by A. S. M. Chisholm of Bennington.

Dr. Geo. Davenport of E. Randolph presented an obituary of E. F. Upham, M. D., of Randolph, and Dr. E. S. Allbee an obituary of E. H. Pettingill of Saxton's River. An obituary of C. M. Terrill, M. D., of White River Junction, was presented by Dr. T. F. Gartland of White River Junction, and on account of the absence of the author it was read by title.

Adjourned.

AFTERNOON SESSION.

Met at 2.15 o'clock.

Dr. Ira J. Prouty of Keene, N. H., delegate from the New Hampshire Medical Society, presented credentials and was introduced to the Society by the President and invited to participate in our deliberations.

A paper on Hemianopia was read by Dr. A. S. M. Chisholm of Bennington.

Dr. Geo. H. Gorham of Bellows Falls presented the Vice-President's annual address, entitled "Treatment of the Eye by the General Practitioner," which was discussed by Dr. H. D. Holton.

Dr. S. E. Darling of Hardwick presented a paper entitled, "Report of the Recent Epidemic of Small Pox in Hardwick." The subject was discussed by Drs. C. S.

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Caverly, R. J. Goss, H. D. Holton, J. Henry Jackson, C. W. Peck and Geo. Roberts.

Dr. A. P. Grinnell presented a paper on "The Use and Abuse of Drugs in Vermont."

Adjourned.

EVENING SESSION.

Met at 8.15 o'clock with the Vice-President, Dr. Geo. H. Gorham, in the chair.

Dr. M. R. Crain of Rutland presented the President's annual address on "Localization of the Lesion in Paralysis."

Dr. D. C. Hawley presented the report of the Special Committee on Reorganization, appointed one year ago, which was discussed by many of the members.

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Report on Reorganization.

The subject of the reorganization of this Society upon a basis of representation from county or district medical societies, has been under consideration and discussion to a greater or less extent since 1894.

At three different times a committee has been appointed to consider and report upon a plan of reorganization—the last time being at the meeting one year ago. Your committee then appointed begs leave to report as follows:

A better and more thorough organization of the medical profession in the State of Vermont for the purpose of promoting its scientific, social and material welfare is not only desirable but almost imperative. Such an end can best be accomplished in this Society. Admitting the correctness of the two foregoing propositions, this Society ought to include in its membership, all or nearly all of the six hundred regular physicians in the State.

It ought to do so much for its members along the three lines already mentioned, viz: scientific, social and material, that no member of the profession could afford to remain without it.

A plan which aims to take care of the material or business welfare of its members, is with us an innovation, but is certainly worthy of careful attention and thought, and in the opinion of your committee, will prove a strong incentive to membership.

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The following general plan for the reorganization of the Society, imperfect in its detail and calling for much discussion and improvement, is submitted by your committee.

The establishment in each County, if possible, of a County Medical Society, which shall be a branch of this Society.

In case there are too small a number of physicians in any County to warrant an independent County Society, the physicians in such county may unite with those in an adjoining county.

Membership in the State Society (excepting the present members) to be obtained only through the County Societies, excepting also the cases of physicians in any county where there is no County Society, in which case physicians may join the State Society directly.

County Societies to be composed primarily of the members of this Society resident in the county.

In case there is at present a County Society, such society to be invited to become affiliated with this Society.

The formation of a County Society to be obligatory in all cases where there are ten or more physicians who are members of the State Society.

The officers of the State Society and the chairmen of the regular committees and, if thought best, the Presidents of the County Societies, to be designated "The Council." The Council to manage the affairs and interests of the Society, when not in session.

Each County Society to elect annually one "Fellow" for every ten members, and for every additional fraction of more than half that number, to represent it in the parent

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society. "The Council" and "The Fellows" to constitute the "Governing Board" which shall conduct the general business of the annual meeting. The officers to be elected annually by the Governing Board or by the Society, as deemed best.

The Fellows elected each year shall also be the delegates to the American Medical Association.

Each County Society to elect its own officers, and enact its own laws, provided the latter are not at variance with the laws of the parent society.

One fee—to be agreed upon—to cover membership in both the County and State Societies, and entitle the member to receive the Transactions.

Members not to be allowed to let their dues remain unpaid and their membership lapse, but dues to be collected, when necessary, the same as any other bill due the Society or an individual, would be collected.

As affecting the business or material interests of its members, your committee urgently recommends that this Society take upon itself the duty of defending all suits for malpractice, and all suits in any way affecting the professional status of any of its members, when unjustly brought, and that it take cognizance of, and prosecute violations of the medical practice act, or of the laws of public health.

Your committee further suggests as worthy of consideration, the question of the advisability of creating a fund for the care of the aged among its members, when necessary.

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The procuring of a new Charter giving the Society the foregoing powers, may be necessary.

Respectfully submitted,

D. C. HAWLEY,
J. M. CLARKE, } Committee.
H. R. WILDER,

After the close of the evening session, the annual banquet was served in the dining room of the Berwick House, Dr. E. M. Pond of Rutland serving as Anniversary Chairman.

SECOND DAY.

FRIDAY, Oct. 12th, 1900.

Met a 9.20 A. M.

The Committee on Nominations presented their report and the following officers and delegates were duly elected by ballot;

OFFICERS.

President—W. D. HUNTINGTON, Rochester.
Vice-President—E. M. BROWN, Sheldon.
Secretary—D. C. HAWLEY, Burlington.
Treasurer—E. S. ALLBEE, Bellows Falls.
Auditor—W. L. HAVENS, Chester Depot.

COMMITTEES.

Executive—W. D. Huntington, Rochester, D. C. Hawley, Burlington, E. R. Campbell, Bellows Falls.

On Publication—D. C. Hawley, Burlington, F. R. Stoddard, Shelburne, S. E. Maynard, Burlington.

On Necrology—F. L. Osgood, Townshend, Geo. H. Fox, Rutland, E. D. Ellis, Poultney.

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On Legislation—W. N. Platt, Shoreham, H. D. Holton, Brattleboro, A. B. Bisbee, Montpelier.

Board of License Censors—H. C. Tinkham, Burlington, C. W. Strobell, Rutland, W. N. Platt, Shoreham.

DELEGATES.

Medical Department U. V. M.—E. M. Pond, Rutland, S. E. Darling, Hardwick.

Dartmouth Medical College—F. R. Stoddard, Shelburne, R. J. Goss, Hartford.

Maine Medical Association—J. D. Brewster, Windsor, Jo W. Jackson, Barre.

Massachusetts Medical Society—A. S. M. Chisholm, Bennington, E. G. Roberts, Fair Haven.

Connecticut Medical Society—H. D. Holton, Brattleboro, P. P. White, Williamsville.

Rhode Island Medical Society—R. O. Stoddard, North Ferrisburgh, H. H. Swift, Pittsford.

New Hampshire Medical Society—C. S. Scofield, Richford, A. L. Miner, Bellows Falls.

New York State Medical Society—O. C. Baker, Brandon, W. S. Vincent, Orwell.

New York State Medical Association—A. T. Woodward, Brandon, Geo. Davenport, East Randolph.

Northern New York Medical Association—J. N. Jenne, St. Albans, E. M. Brown, Sheldon.

White River Valley Medical Association—O. W. Sherwin, Woodstock, J. S. Richmond, Windsor.

Connecticut River Valley Medical Association—W. F. Hazelton, Bellows Falls, B. A. Chapman, Springfield.

American Medical Association—W. N. Platt, Shoreham, C. W. Peck, Brandon, H. D. Holton, Brattleboro, C. W. Strobell, Rutland, F. R. Stoddard, Shelburne, C. S. Caverly, Rutland, D. C. Hawley, Burlington, E. S. Albee, Bellows Falls, A. P. Grinnell, Burlington, M. R. Crain, Rutland, J. M. Allen, St. Johnsbury, Fred K. Jackson, Burlington.

Anniversary Chairman—C. S. Caverly, Rutland.

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The Special Committee appointed to nominate a committee on reorganization to carry on the work of reorganization begun by the committee of last year, reported that they had selected as such committee, Drs. D. C. Hawley, Geo. H. Gorham, J. N. Jenne, W. H. Vincent and H. D. Holton, and on vote of the Society they were duly elected.

On motion of Dr. J. S. Hill, it was voted that the report of the Committee on Reorganization as read yesterday be printed and sent to all members of the Society.

Dr. E. M. Pond of Rutland presented a paper entitled, "Puerperal Septicaemia," which was discussed by Drs. C. S. Scofield, O. C. Baker and J. M. Hamilton.

"Pneumonia" was the title of a paper read by Dr. W. L. Heath of Richmond. This paper was discussed by Drs. E. M. Brown, F. L, Osgood, C. S. Scofield, F. R. Stoddard, E. R. Clark and M. H. Eddy.

Dr. J. Sutcliffe Hill of Bellows Falls presented a paper entitled: "Some of the Evils of Aseptic Surgery." The subject was discussed by Dr. E. M. Pond and Dr. Ira J. Prouty.

Dr. C. W. Strobell of Rutland presented a paper on "Vaginal Hysterectomy, with two case reports." Discussed by Drs. Ira. J. Prouty and E. M. Pond. Adjourned.

AFTERNOON SESSION.

Met at 2 o'clock.

Dr. C. W. Peck of Brandon offered the following, which was seconded by Dr. C. S. Scofield of Richford, and carried by unanimous vote:

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Resolved, "That this society extends a vote of thanks to the physicians of Rutland, the Rutland Street Railway, The Rutland & Central Vermont Railroads, and all others, for their kindness and hospitality during our stay in this city."

Dr. F. E. Clark of Burlington read a paper on "Abdominal Palpation in Obstetrics." Discussion followed which was participated in by Drs. C. W. Peck, C. S. Scofield, W. H. Vincent, C. W. Strobell, H. L. Newell, O. F. Clough and H. H. Swift.

Dr. L. H. Hemenway of Manchester, presented a paper on "Rupture of the Uterus during Childbirth." This paper was discussed by Drs. H. H. Swift, C. S. Scofield, C. W. Strobell, C. W. Peck and F. E. Clark.

The following physicians were elected to membership during the meeting:

C. W. Bartlett, E. Dorset, U. V. M. '88.
A. H. Bellrose, Rutland, LaValle Univ. '92.
John H. Blodgett, Saxton's River, U. V. M. '97.
Chas. A. Brown, Ludlow, Baltimore.
E. T. Brown, Montgomery, U. V. M. '96.
J. H. Buffum, Wallingford, U. V. M. '98.
O. F. Clough, Wells, Baltimore.
J. S. Deziel, Barre, LaValle Univ. '93.
N. J. Delehanty, Rutland, Albany M. C. '93.
E. D. Ellis, Poultney, Harvard '97
E. E. Ellis, Brookfield, U. V. M. '95.
Leland G. Filmore, Bennington, Albany M. C. '96.
H. S. Goodall, Bennington, Columbian Univ., 1890.
Chas. E. Griffin, Fair Haven, Univ. of Pa. '94.
Lewis A. Heidel, No. Clarendon, U. V. M '97.

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Tom H. Hack, Proctor, U. V. M. '00.
H. W. Hammond, Rutland, U. V. M. '96.
Harry F. Hull, Proctorsville, Albany.
C. K. Johnson, Burlington, U. V. M. '98.
W. F. McKenzie, Burlington, U. V. M. '94.
Luther B. Newton, No. Bennington, Albany M. C. '74.
F. H. O'Conner, Bellows Falls, L. I. Col. Hosp. '98.
Geo. D. Parkhurst, Fair Haven, Bellevue '97.
Louis J. Paris, Burlington, Univ. Pa. '88.
Wallace H. Peirce, Newbury, U. V. M. '98.
H. J. Potter, Jr., Bennington, Albany M. C. '87.
A. J. Radike, Burlington, U. V. M.
E. G. Roberts, Fair Haven, Univ. Pa. '84.
Fred C. Russell, Newbury, Dart. '94.
J. M. Stafford, E. Middlebury, U. V. M., '96.
W. M. Stearns, Rutland, U. V. M. '82.
J. J. Trudell, Rutland, U. V. M. '86.
W. J. White, Addison, U. V. M. '98.
E. O. Winship, Danby, U. V. M. '00.
G. H. Stone, Forestdale, Baltimore '97.
R. Lape, Fair Haven, Albany '77.

Voted to hold the next meeting in Bellows Falls.

ATTENDANCE.

J. Henry Jackson, Barre.
E. S. Allbee, Bellows Falls.
F. H. O'Conner, Bellows Falls.
Geo. H. Gorham, Bellows Falls.
A. L. Miner, Bellows Falls.
Edw. R. Campbell, Bellows Falls.
J. Sutcliffe Hill, Bellows Falls.

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Geo. Davenport, E. Randolph.
A. S. M. Chisholm, Bennington.
L. B. Newton, No. Bennington.
Hall Staples, Grafton.
Frederick L. Osgood, Saxton's River.
J. H. Blodgett, Saxton's River.
M. R. Crain, Rutland.
C. W. Strobell, Rutland.
Geo. H. Fox, Rutland.
E. M. Pond, Rutland.
H. L. Newell, Rutland.
Amelia E. Brown, Rutland.
A. H. Bellrose, Rutland.
Jas. M. Hamilton, Rutland.
John D. Hanrahan, Rutland.
S. W. Hammond, Rutland,
Geo. Rustedt, Rutland.
N. J. Delehanty, Rutland.
J. T. Lyston, Rutland.
C. C. Perry, West Rutland.
O. J. Gilchrist, Rutland.
B. C. Senton, Rutland.
J. N. Jenne, St. Albans.
Walter H. Vincent, Orwell.
E. D. Ellis, Poultney.
L. D. Ross, Poultney.
H. L. Manchester, Pawlet.
R. J. Goss, Hartford.
C. W. Peck, Brandon.
O. C. Baker, Brandon.
J. W. Estabrook, Brandon.

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O. G. Dyer, Brandon.
E. R. Clark, Castleton.
W. H. Austin, Rupert.
C. W. Howard, Shoreham.
W. N. Platt, Shoreham.
P. P. White, Williamsville.
F. L. Osgood, Townshend.
F. W. Baylies, Burlington.
H. C. Tinkham, Burlington.
A. P. Grinnell, Burlington.
D. C. Hawley, Burlington.
J. M. Clarke, Burlington.
F. E. Clark, Burlington.
H. H. Swift, Pittsford.
J. M. Stafford, East Middlebury.
E. H. Martin, Middlebury.
M. H. Eddy, Middlebury.
E. O. Winship, Danby.
S. E. Darling, Hardwick.
F. C. Liddle, Dorset.
Walter L. Havens, Chester.
F. R. Stoddard, Shelburne.
W. J. White, Addison.
R. O. Stoddard, North Ferrisburgh.
Ellis G. Roberts, Fair Haven.
Charles E. Griffin, Fair Haven.
George D. Parkhurst, Fair Haven.
R. Lape, Fair Haven.
Henry D. Holton, Brattleboro.
S. E. Lawton, Brattleboro.
L. A. Heidel, North Clarendon.

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F. C. Morgan, Felchville.
Ira J. Prouty, delegate, Keene, N. H.
E. M. Brown, Sheldon.
J. D. Brewster, Windsor.
Wallace M. Pierce, Newbury.
A. B. Bisbee, Montpelier.
Minnie S. Marshall, Montpelier.
W. D. Huntington, Rochester.
L. H. Hemenway, Manchester.
O. F. Clough, Wells.
W. L. Heath, Richmond.
J. H. Buffum, Wallingford.
—— Stone, Wallingford.
H. S. Goodall, Bennington.
W. F. Hazelton, Bellows Falls.
C. S. Scofield, Richford.

Attendance, 85.

Signed:

D. C. HAWLEY, M. D.,
Secretary.

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President's Annual Address.

Localization of the Lesion in Paralysis.

By M. R. Crain, M. D., Rutland.

It is not my purpose in this paper to confine myself to cerebral localization, neither do I intend to treat the subject in an exhaustive way, but to jot down a few facts that I trust may be of some aid to those practitioners who have not made a special study of the subject, not only of the cerebral localization but paralysis in general, whether it be due to a lesion of the brain, spine or peripheral nerves.

There are two general divisions of paralysis—atrophic and non-atrophic. In the atrophic form there is rapid wasting of the muscles affected because the lesion is situated at the trophic center or at some part of the tract between the trophic center and the muscles that are paralyzed. Being thus cut off from the center that controls nutrition, the muscles waste rapidly.

The lesion that produces the atrophic form may be located in the brain, the spinal chord, the peripheral nerves or their nerve roots. The non-atrophic form of paralysis is caused by a lesion of the primitive motor centers or at some part of the tract between the motor and the trophic center, thus causing paralysis without wasting of the muscles except that caused by disuse.

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In all cases of paralysis there occurs secondary degeneration of the nervous tract affected or cut across by the lesion and the degeneration occurs in the direction that the impulses travel. That is, if we have a transverse lesion of the spinal cord the motor fibers will degenerate toward the periphery or the muscles that they supply, while the sensory fibers will degenerate towards the center or the brain. The only exception to this rule is in the peripheral nerves, where both sensory and motor fibers degenerate toward the periphery, because both the sensory and motor fibers are external to their respective trophic centers. The differential diagnosis between the two general forms of paralysis is in most cases very easy, unless the lesion is so recent that there has been no time for the muscles to waste; but where a few weeks have elapsed before the case is seen, the wasting of the muscles is so great in the atrophic form that the diagnosis can be made in most cases simply by inspection.

In those cases where the muscles are small or deeply covered with fat, or the lesion is of such recent date that the wasting is not well marked, we can bring to our aid electro diagnosis. Both the galvanic and the faradic current are used in electro diagnosis, but those who have not had special training in the practice of electro diagnosis had better confine themselves to the faradic current.

In non-atrophic paralysis the reaction to the faradic current is normal or sometimes exaggerated. In a well marked case of atrophic paralysis the muscles do not respond at all to the faradic current, but in some cases of atrophic paralysis that are not complete or of short duration the faradic irritability is not entirely abolished but the contractions are weak, slow and often vermicular instead of quick and strong

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as they are in non-atrophic paralysis. All cases of atrophic paralysis except those muscles supplied by the cranial nerves are caused by a lesion of the peripheral nerves, their nerve roots or the anterior horns of grey matter of the spinal cord. If the lesion is located in the peripheral nerves there is sensory as well as motor paralysis, but if the paralysis is not complete the sensation is less impaired than motion, as it takes much more severe lesion to completely abolish sensation than it does motion. There is rarely complete loss of sensation from disease or pressure on the posterior nerve roots, but complete paralysis of motion often occurs from pressure on the anterior nerve roots.

If the lesion is confined to the anterior horns of gray matter of the spinal cord, there is motor paralysis without any impairment of sensation. Atrophic paralysis of the muscles supplied by the cranial nerves may be produced by a lesion of the trophic centers situated at the base of the brain, the medulla oblongata and the upper part of the spinal cord, also of the cranial nerves themselves, or pressure from a swelling of their sheaths as they pass through their bony foramina. As some of the cranial nerves are nerves of motion only, we can have motor paralysis without impairment of sensation from lesion of these nerves.

The non-atrophic paralyses are always central and are caused by a lesion of the primitive centers of motion in the cerebrum or in the path between them and the trophic centers situated at the base of the brain, the medulla oblongata or the spinal cord. In these cases of non-atrophic paralysis there may or may not be any impairment of sensation according to the location and extent of the lesion. In cases of atrophic paralysis except cases of

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paralysis of the muscles supplied by the cranial nerves, the differential diagnosis resolves into whether the lesion is situated in the peripheral nerves, the anterior nerve roots or the anterior horns of gray matter. If the lesion is located in a peripheral nerve we generally have a history of injury to the nerve or rheumatic inflammation of the sheath of the nerve in acute cases; and in chronic cases there is generally a morbid growth of the nerve or near it, causing pressure paralysis. The paralysis does not extend above the point of the lesion and is confined to the muscles supplied by the affected nerves below the seat of the disease. There is always some disturbance of sensation but in many cases the sensation is not very much diminished.

When the trouble is in the anterior nerve roots the pathological condition is generally spinal meningitis causing pressure on the nerve roots, there is seldom complete loss of sensation in these cases but hyperaesthesia and other disturbances of sensation.

If the pathologic lesion is confined to the anterior horns of gray matter of the spinal cord there is more or less complete loss of motion according to the extent of the lesion, but no loss or other disturbance of sensation. The diagnosis between acute ascending paralysis and multiple neuritis is sometimes very difficult, but if we study the cases carefully we can generally make the diagnosis. In both diseases the paralysis is ascending in most cases and they are both accompanied with atrophy and disturbances of sensation; but in multiple neuritis the paralysis begins in the extremities and extends up the course of the nerves that are first affected, but ascending spinal paralysis first

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affects one or more pairs of spinal nerves and as the pathologic changes ascend the spinal cord, the higher pairs of nerves are affected. In multiple neuritis we can generally find some tender points along the nerve trunks, and there is generally some swelling along the extremities in the early stages of the disease. There is frequently a history of toxaemia as alcohol, lead, malaria, or beriberi, as a cause of multiple neuritis.

Transverse myelitis generally results from injury, causing degeneration of the motor path and non-atrophic paralysis occurring below the transverse section of the spine that is the seat of the inflammation; while atrophic paralysis occurs in those muscles that are supplied by the nerves that are given off from that part of the spinal cord that is the seat of the inflammation.

In locating the level of the lesion of the spinal cord, we must bear in mind that the spinal cord ends at the lower part of the body of the first lumbar vertebra, also that the vertebral spines (which are our external guides to the position of the vertebra) and cord are not all perpendicular to their respective vertebrae. In the cervical region the spines correspond to the lower border of their respective vertebrae. Each of the first three dorsal spines are opposite the upper part of the vertebra below. From the fourth to the eighth dorsal each spine corresponds to the middle of the body of the vertebra below. The ninth, tenth and eleventh spines slope about the same as the first three dorsal, while the rest of the spines are opposite the bodies of their own vertebrae.

More important than the above is the relation of the spines to the nerve origin. The first three spines are op-

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posite the origins of the third, fourth and fifth cervical nerves. The sixth and seventh pairs arise opposite the interval between the fourth and fifth and sixth cervical spines respectively. The sixth cervical spine corresponds to the origin of the eighth cervical nerve and the seventh cervical spine to the first dorsal nerve. The first four dorsal nerves vary. The first spine corresponds to the interval between the second and third pairs or the origin of the third pair. The second spine is between the third and fourth pairs, or opposite the fourth pair. The third opposite the fifth or the interval between the fifth and sixth pairs. The fourth spine is opposite the origin of the sixth pair or even below it; the fifth spine opposite to the origin of the seventh pair, the sixth spine to the eighth pair, the seventh spine to the ninth pair, the eighth to the upper part of the tenth pair, the ninth to the eleventh pair, and the tenth to the twelfth pair.

The first lumbar nerve arises opposite to the eleventh dorsal spine, the second lumbar opposite the interval between the eleventh and twelfth spine, the third and fourth opposite to the twelfth spine; the fifth lumbar and first sacral opposite the interval between the twelfth dorsal and first lumbar spine, while the remaining sacral nerves arise nearly opposite the first lumbar spine.

The above enables us to locate the upper limit of the lesion in cases of spinal paralysis. Although the motor centers and the motor paths of the brain have been located quite accurately, still it is more difficult to locate the lesion in a case of paralysis due to disease of the brain than when due to a lesion of some other part of the nervous system, because the brain is so complex and has so many other functions, besides presiding over motion.

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The motor centers of the cerebrum are located in the two central convolutions, or as they are sometimes called, the ascending frontal, situated just in front of the ascending parietal convolution, and behind and parallel to the fissure of Rolando. The motor center for the face and lips are located at the lower part of these two convolutions. The centers for the arms are located in the middle, and the centers for the legs are situated in the upper part of these two convolutions, that for the big toe being in the very upper part.

The fibers from these motor centers pass between and connect different parts of the same hemispheres, others connect corresponding parts of the two hemispheres, but most of them converge from the various motor centres to the inner and lower part of the hemispheres, forming a band of fibers that pass between the lenticular nucleus, and the optic thalamus and caudate nucleus, forming what is called the internal capsule, so called because it passes internal to the lenticular nucleus. This bundle of fibers continues down through the crus, the anterior part of the pons to the medulla where they decussate and continue down, forming the anterior or motor tract of the spinal cord.

A lesion of the brain cannot cause motor paralysis unless it be situated in the above named motor centers or motor tract, or some adjacent part causing pressure on some part of the motor centers or tract. In acute cases, as cerebral hemorrhage, especially if the clot is large, other symptoms may occur, because of the increased intercranial pressure causing stupor or the clot may affect the mental centers, making it impossible to locate the lesion accurately, or to judge of the extent of the pathologic

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change. In chronic cases, as tumors, the change is so gradual that the brain accommodates itself to the new conditions, and we are able to locate the exact seat and extent of the disease much more accurately.

The whole motor region of the cerebrum is supplied entirely by the middle cerebral artery; thus we see that a small growth pressing on this artery would produce wide spread paralysis, the same as if the artery was occluded by an embolism.

Associated with paralysis due to cerebral disease there are frequently convulsions occurring in partly paralyzed muscles, whose motor centers are adjacent to those paralyzed. If the convulsions continue after the lesion has reached its full extent, the lesion is always cortical. Paralysis due to a cortical lesion is generally confined to one limb, or a few muscles, as it takes a very large lesion to affect the whole of the motor area of one's side, but this sometimes occurs from a very large hemorrhage. It also makes a difference to what depth the lesion reaches, viz: if we have a superficial tumor limited to the motor center of the right arm, the arm only wonld be paralyzed; but with a tumor confined to the same superficial area but extending deeper, we can have paralysis of both right arm and leg, because the tumor would press on the fibers that pass down from the motor center of the leg. Sometimes we have cases of paralysis of some muscles with spasms of others, as in cases of cortical tumors, the tumor abolishing the function of the center for the paralyzed muscles and producing an irritation of the adjacent motor centers.

Single cortical lesions always affect muscles whose motor centers are adjacent, that is, one cortical lesion could

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produce paralysis of both arm and leg, but couid not produce paralysis of the face and leg without affecting the arm.

Disease of the angle and posterior segment of the internal capsule causes hemiplegia of the common type, the lower part of the face, the tongue, arm and leg being involved, and if the disease is on the left side there may be at first defect of speech. The paralysis is permanent if the lesion continues, except such recovery as may occur from compensation. Convulsions may attend the onset of acute lesions, but are not frequent. The paralysis is typical, and most cases of simple hemiplegia is due to disease of this part, and we must assume that region is diseased unless there are other symptoms to indicate a different seat of disease. But hemiplegia from disease of the capsule is not always complete, as a small lesion might produce complete paralysis of the leg, moderate of the arm, and very slight paralysis of the face, or the reverse may happen, but there is scarcely ever limitation of the palsy. Disease of the corpus striatum or optic thalamus does not produce any paralysis unless the lesion involves or causes pressure on the internal capsule, and spasm is more likely to occur than in primary disease of the internal capsule. In some cases of hemiplegia due to hemorrhage of the lenticular nucleus or optic thalamus we get nearly complete recovery. Iu these cases the internal capsule is affected only by pressure, and as the clot is absorbed the pressure is relieved and function restored.

The characteristic symptoms of the lesion of the crus cerebri is hemiplegia, affecting the lower part of the face as well as the limbs and accompanied by paralysis of the third nerve of the opposite side, that is the side of the lesion, both

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symptoms coming on at the same time. The affection of the third nerve is generally complete, but sometimes it is partial, convulsions are rare.

The hemiplegia due to a lesion in the upper part of the pons does not differ from that caused by a lesion of the internal capsule ; but a lesion situated in the middle or lower part of the pons produces alternate hemiplegia, that is, paralysis of the limbs of one side and of the fifth, sixth and seventh nerves of the other, or the side of the lesion. A lesion of one side of the pons produces a conjugate paralysis on the same side as the lesion, causing both eyes to turn toward the opposite side. Bilateral lesions are common, convulsions are rare in chronic but common in acute cases, both arms and both legs may be involved or there may be convulsive coughing. If the fifth nerve is involved there is anesthesia of the region supplied by the nerve on the side of the lesion. Hemorrhage into the pons may cause extreme contraction of the pupils. Hyperpyrexia is common immediately after the onset of the acute lesion of the pons, and scarcely ever attends disease of other parts of the brain. Severe acute lesions of the medulla oblongata are quickly fatal by interference of the cardiac and respiratory centers, even a small hemorrhage is usually so on account of the small size of the medulla. The chief acute lesion that may give rise to a diagnostic problem is softening from the obstruction of the blood vessels. The palsy often affects both limbs, and if one sided the tongue may be paralyzed on the side opposite to the lesion, if this is in the anterior part of the medulla so as to involve the pyramid and the root fibers of the hypo glossal nerve. The face with the lips always escapes.

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The most characteristic symptoms are due to interference with the hypo-glossal, glosso-phyrangal and spinal accessary nerves, producing bulbar paralysis. Large bilateral lesions of the cerebrum cause paralysis resembling that caused by a small lesion lower down in the brain or the spinal cord where the motor tracts are small and near together. Thus disease of the highest part of the central region which sometimes results from meningial hemorrhage during birth causes paralysis of both legs closely resembling that due to disease of the spinal cord. Disease of the lowest part of each ascending frontal convolution causes bilateral paralysis of the lips, tongue and throat closely resembling labio-glossal paralysis. In the few recorded cases in which the symptoms which are generally produced by bilateral lesion, were supposed to be due to a lesion of one side, there was probably an old lesion or congenital defect of the other hemisphere which has been overlooked.

I have purposely omitted treating of the paralysis of the nerves of special sense and have only touched on paralysis of sensation when it seemed necessary for the purpose of making a local diagnosis of the motor paralysis.

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VICE-PRESIDENT'S ADDRESS.

The Treatment of the Eye by the General Practitioner.

By George H. Gorham, M. D., Bellows Falls, Vice-President.

There is probably no organ of the body but what the general practitioner is better qualified to treat, than the eye. There is hardly a disease or condition to which flesh is heir, but what he is ready to give advice and treatment. But when the visual organ is affected, he at once loses confidence in himself, and very frequently tells his patient that he knows nothing about the eye. I think that this is a wrong condition for the medical man to be in. It is an injustice to your patients not to be able to correctly diagnose the common diseases of the eye and to properly treat many of them. Ophthalmology is not a separate science, but simply one branch of medical knowledge. You certainly should be able to early recognize the dangerous diseases and if you did not feel qualified to treat them they could be quickly sent to an oculist.

There are in the United States, according to the census of 1890, some over 50,000 persons who are totally blind, and, I am sorry to say, Vermont has the highest ratio of

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any State in the Union. It is generally conceded that 40 per cent. of all cases of blindness could have been prevented by proper treatment. You will therefore see the great responsibility which rests upon you to properly care for these patients in the first stages, as you are, in the great majority of cases, the first to see them.

We are becoming more and more impressed every year with the importance of preventive medicine. This will apply in a large degree to diseases of the eye. You have all heard, undoubtedly, of the Credé method of treating the eye of the new born child with a strong solution of nitrate of silver but I presume that only a very few present have practiced it.

At the time that Credé originated this method 10 per cent of all cases in his lying-in hospital were afflicted with ophthalmia neonatorum. At present only 0.02. I do not think that it is necessary in most instances to follow this treatment, but I see cases of purulent ophthalmia often enough to think that the attending physician should use the silver solution in all cases that are in the least suspicious. A one per cent. solution is generally strong enough. Washing the eye with a 1–5000 bichloride solution is also good, or even a saline solution. Remember that over one-fourth of all cases of blindness in the civilized world is due to this disease. Quite a number of the States and Countries have passed laws fining any midwife, or attendant, who neglects to promptly report any suspicious cases of red or inflamed eyes in the newborn infant. Vermont has neglected to do so.

I would next call your attention to the hygiene of the eye, especially in reference to the school life of children. I would advise the examination of the eyes of all children

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at the time that they first entered upon their school work. This could be done by the Superintendent. All children whose distant vision did not reach a certain standard and whose near point was abnormal, or who had inflamed eyes or lids, should be sent home with a note to their parents advising them to consult their family physician, or an oculist, at once. In Munich they make three or four examinations a year at regular intervals with beneficial results, the standard of vision constantly rising. In the past but very little attention has been paid to the location of our school houses or the amount of light per room but in the modern structures this has been rectified.

It is during this period of life, the school age, that we see so many cases of asthenopia, or eye strain. I consider the treatment of this condition one of the most important that is brought to your attention, for not only the immediate happiness and well-being of the patient is involved but future generations are liable to be affected.

Every person at birth is hypermetropic, or far-sighted, but under the constant strain of civilized life a large number become astigmatic, and later myopic or near-sighted. A myopic eye, you must remember, is a diseased eye and your endeavors should be to so guard and protect your young patients that they will not advance to this condition. This can be brought about by first looking after their hygienic surroundings and secondarily by correcting all errors of refraction or eye strain. By the present mode of instruction a child is under a constant strain with his eyes from the time that he enters the first grade until he completes his education.

Is it any wonder that many suffer from asthenopia? These cases I should advise sending to a competent ocu-

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list, for a large majority can be relieved by properly fitted lenses. The busy physician has not the time to devote to it, even if he had had the training to do it. By so doing, at the first symptoms manifested, pains through the eyes headaches, and weakness of the eyes on study, you will not only be able in a large number of cases to give your patient relief from his symptoms but will also prevent an advancement of his refractive error. Statistics compiled by both Risley and Oliver prove that if these cases are treated early it will prevent their development to a higher or more advanced condition. It is a positive fact that there are fewer cases of myopia to-day relatively than a generation ago, and the reason is that the children have had their low degrees of refraction properly treated.

The physicians of to-day are well aware that many of the functional disturbances of the nervous system are due to a strain on the ciliary muscle of the eye, or an unbalanced condition of the extrinsic muscles of the eyeball. I do *not* believe that even the proper correction of all abnormal conditions in the eye will cure every case of neurasthenia, epilepsy, or hysteria, but I do know that in very many of these cases you will give relief, and help in others. It is your duty to use and apply all forms of treatment that wlll be of help to your patient, and I certainly believe that the correction of all errors in refraction and placing the external muscles of the eye in equilibrium will go far towards it.

One of the most frequent conditions of the eye which you are called upon to treat is a foreign body upon the conjunctiva or cornea. I would urge upon you the importance of making a careful examination in such cases, as I have frequently found small particles upon the

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cornea, generally of a vegetable nature which had remained there for some weeks. In a few cases sympathetic inflammation had already set in. In many of these cases a small tuft of cotton upon an applicator will easily remove the object. Four per cent solution of cocaine to be used unless patient has symptoms of glaucoma. I think that general practitioners, as a rule, use too strong solutions of the astringents for the different kinds and degrees of conjunctivitis. A one grain to the ounce solution of zinc sulphate will be more efficacious in many cases than one of two or three grains. The same will apply to silver solutions.

In acute conjunctivitis I very frequently use a tannic glycerine solution, about four grains of the former, one dram of the latter to the ounce of aqua destillata.

Do not diagnose all chronic or subacute inflammations of the conjunctiva as granulated lids. It is a comparatively rare disease here in the country. The blue stone still has its advocates for this condition. I have used the strong tannic acid solution nitrate of silver and subconjunctival injections of bichloride of murcury 1–1000. Whatever else you prescribe do not use poultices of any form except in some lid inflammations.

It will simply congest the conjunctiva and make the inflammation worse. Hot boric acid solutions are nearly always permissible except in injuries and acute purulent ophthalmia, when cold applications and ice bags are better.

In all inflammations of the cornea especially any form of ulceration use hot applications frequently repeated; at the same time prescribe atropia, two grains to the ounce. If you have a central corneal ulcer I should advise

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you to have your patient consult some oculist as in many of these cases there is an opacity which is liable to permanently remain and obstruct vision. It is well to have someone else to share the responsibility with you.

I presume that in acute inflammations of the eye more mistakes have been made in diagnosis between conjunctivitis, iritis and glaucoma than in all the other diseases of this organ combined. In some cases it *is* difficult to distinguish between them. You must remember that in conjunctivitis the superficial vessels only are dilated and injected, the pain is not severe, the cornea, pupil and iris are in a normal condition and the vision good except from occasional deposits of secretion. In iritis on the other hand the deeper blood vessels are engorged with blood, the pain is generally sharp and severe, the pupil contracted, the iris of a muddy brown or greenish color, aqueous humor slightly turbid, vision somewhat impaired. Tension of eye normal in both diseases. In glaucoma the conjunctiva is deeply injected, of a dusky red color, veins dilated, pain very severe through eyes and temples, anterior chamber shallow, partial anæsthesia of the cornea, which has a cloudy appearance, pupil dilated very marked diminution of vision and a pronounced increased tension of the eyeball.

Having these diagnostic points in mind it is not often that you will make a mistake in your diagnosis.

Hot applications and atropine are your sheet anchor in iritis. Two grains to the ounce is usually sufficient but do not be afraid to use four, or even eight grains to the ounce for a short period, using constitutional treatment according to cause of the disease.

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In cases of glaucoma I think that it is always advisable to consult an oculist. In most cases an iridectomy is demanded, although eserine is of temporary relief in some instances.

I think that every well equipped physician should become familiar enough with the use of the opthalmoscope so that he could at least discover any gross changes which had taken place in the posterior eye. By so doing, he would be able not only to treat the constitutional disorders which are producing the eye symptoms but in many cases he would send the patient to a specialist before injury had been done. Frequently we find an albuminuric retinitis when there has been no marked symptoms of kidney disease. Almost the first positive proof of tumor in the brain is seen in the choked disc of the optic nerve. The same will apply to atrophy of the optic nerve, indicating a serious spinal trouble, or toxic condition of the nervous system. If you have a patient who uses tobacco or spirituous liquors to excess and complains to you in regard to his vision you should at once suspect atrophy of the nerve. He should have treatment as early as possible in order to preserve his vision, or at least part of it. As there are more cases of blindness due to nerve atrophy than any other cause you should be on your guard against hastily treating a case of marked impairment of vision without first giving your patent an opthalmoscopic examination, or having it done.

In regard to operations on the eye I think that only exceptionally, and those of a minor nature, or in case of emergency, should be attempted by a man doing general practice. He is not called upon frequently enough to have that fine technique which is required in many cases.

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As I have before stated, errors of refraction and an unequalled strength of the external muscles of the eye are the cause of many functional nervous troubles and reflex conditions. And on the other hand many constitutional diseases produce local ocular disturbances. In a strumous condition of the system we get styes, blepharitis, and phlyctenulae. In rheumatism, iritis, choroiditis. In syphilis and tabes, paralysis of the external muscles of the eye and nerve atrophy. Syphilis is the cause of three-fourths of all cases of atrophy and choroiditis, one-half of iritis and one-third of ocular paresis. In chronic Bright's we have a retinitis and in diphtheria a paralysis of the muscles.

I think that every practising physician should have a set of Snellen's Test Types in his office and be able to learn the visual acuity of his patients, who complain of imperfect vision. I want to impress upon you that this test does not reveal to you whether he needs lenses to correct any error of refraction, or prisms to relieve strain. In many cases of asthenopia the patient has vision above normal. It will simply give you an idea as to his sight.

A subject which extends over as large a field as this cannot be covered by a paper limited in time. But I urge upon you the importance of making a more careful research and study of this subject. It will be a source of gratification to you and your patients and I trust to future generations.

DISCUSSION.

H. D. Holton, Brattleboro.—This is a very interesting and instructive paper and hardly needs much discussion; it has discussed itself. However, there are some points in it which I am very much interested in. I suppose I

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was asked to open this discussion because I received my education at a time when there wasn't an ophthalmologist in Vermont, and I started out with the idea that as a general practitioner I must do almost everything. I knew enough about eyes to let them alone, and several other things. The matter of the examination of the eyes in our schools is one of importance. The great trouble in our rural communities is to know how to test the eyes. For some years I was connected with the school board of our town. About 10 years ago my attention was called to the fact that a large number of the pupils in the lower grades, especially the third and fourth grades, were suffering from trouble with their vision. I started out to ascertain what the trouble was, and I very soon discovered. Problems were put upon the board at the back of the room and the pupils were given paper and pencils and asked to copy from the board on to their paper. The trouble seemed to be the different focusing of the eye. The children had a long focus when they were looking at the board and when they wrote on their paper they had a short focus. I said, "this must stop; nothing more must be put on the board." Every desk was supplied with a book and the children's focus was the same all the time. The result was that the children who came along after that did not have the same condition of weakness of the eyes which had existed before. It is much better of course to have an occulist test the eyes of the child; the principal of the school should be able to determine whether the child is suffering from defective vision or whatever it may be. I am sure I can say truthfully that a good many children who have the reputation of being stupid are so because they do not see or hear well. Tests

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should be made before the child is allowed to enter school and if any difficulty is found the child should be sent home with a note to the parents stating the case and suggesting that a physician or oculist be consulted at once. This is a matter of great importance and I hope these tests will soon be made in all our schools. I think it is not more than 15 years since there was located within the limits of Vermont an oculist, a specialist in diseases of the eye. If I am correctly informed there are probably a half dozen at the present time. This makes it easier for the general practitioner. For now instead of being obliged to send a patient to New York or Boston, or sending for the specialist to come here,—which is of course expensive,—we may have the work done right at our homes. For 20 years I have treated all diseases of the eye that came to me. As a student I took a course in the New York Opthalmic Institute, as did a good many of my class. We felt it a necessity as we would be scattered about and it would not be easy to reach a specialist,—so I have treated all diseases of the eye, and have made all of the operations on the eye except the operation for cataract. In respect to the removal of foreign bodies from the eye, that is a matter almost every practitioner can do if he only examines the eye carefully. The distinction between conjunctivitis and inflammation of the deeper structures of the eye is important. It is not fair to send a patient off a great distance for the simple treatment of conjunctivitis, but if you have a case of iritis it might be necessary to have expert treatment. If you fail to recognize it, it may be disastrous to the patient. In regard to treating the eye of the new born ; the writer spoke of the use of glycerine and tannin. I have used it far more than the nitrate of silver. One

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dram of tannin to an ounce of glycerine is especially good in the condition of granulation. We get little lesions on the eye. I find that a very excellent result is obtained when inflammation has subsided and opaque spots are left, by the vapor of dilute hydrocyanic acid. Put the acid in an ordinary eye glass, hold it to the eye with the hand which will vaporize the acid.

I expect other speakers will perhaps tell us something better, on the dangers of doing this.

In the treatment of iritis I have seen repeatedly the effusion of lymph into the interior of the eye so the vision was entirely obscured. Good results have been obtained from the use of calomel.

In regard to the opthalmascope, I have used it in other diseases than that of the eye.

I want to commend the writer for this paper; when we read it in the transactions we shall find it of more value than we can in hearing it read. I thank you for your courtesy.

Dr. Edward R. Campbell: In what proportion of cases would you advise the use of the nitrate of silver in new born babes?

Dr. Gorham: You must judge from the surroundings.

Dr. Campbell: What strength?

Dr. Gorham: One per cent in most cases. They do use two per cent; they used to use it stronger.

Dr. Campbell: How frequently should it be applied?

Dr. Gorham: One or two drops in the eye once. But if left with the nurse it should be a weaker solution.

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Report of the Recent Epidemic of Small Pox in Hardwick, Vt.

By S. E. Darling, M. D., Hardwick.

In compliance with a request from your Secretary, I submit the following report of the recent epidemic of Small-pox at Hardwick. I hope I am not expected to make any original contribution to the subject of Small-pox, but rather to present the result of my personal experience. The epidemic through which Hardwick has just passed was introduced in the person of a lawyer who had just returned from Arizona, where Small-pox was prevailing. He arrived in our place on May 25th, with the eruption well out on the face and went about our streets and places of business, including the printing offices and drug stores, until the evening of May 27th, when he consulted me as to what the disease was he was suffering from. I diagnosed the disease Small-pox and he was quarantined until the morning of May 30th, when there was a difference of opinion among the physicians as to the nature of the disease, the diagnosis of varicella prevailing and accordingly the patient was discharged from quarantine. During these few days, the village of Hardwick was in a state of great excitement, for a great many people had been more or less exposed to the disease; the schools were closed; business was nearly at a standstill; people were

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packing their trunks and hurrying to take the first train out of Hardwick; every livery team was engaged and it was estimated that two hundred and fifty people left town during the 28th and 29th of May, and is it to be wondered at when we stop to consider that this country has been most cruelly and fearfully scourged by Small-pox? Wherever it has existed in times past, it has been the greatest scourge of mankind. For centuries prior to Jenner's discovery of Vaccination in 1798, Small-pox had been regarded as the King of fatal diseases. Whole tribes of our Indian population have been swept out of existence by it. Europe in the century preceding the discovery of Vaccination lost in deaths from Small-pox fifty millions of her population. No other case appeared in our town until June 8th, when Mr. S., the editor of our paper, and Mr. K., a drug clerk, came down with it, fourteen days from the appearance of our first case. We had no further cases until June 26th. From this date to July 1st; we had eight cases, all thought to have been contracted from the two cases first mentioned, from June 15th to June 25th. There were eleven cases, up to this time but very few people thought we had Small-pox in our midst; and our paper weekly informed the people that there was no Small-pox in town. They soon began to be suspicious, however, as these patients were allowed to go where they pleased; those whose faces were covered with pustules became shocking objects to those who approached them, and the towns people asked that they be quarantined. Accordingly, on July 27th, a modified quarantine was instituted and on July 31st, the State Board of Health, consisting of Drs. Holton and Hamilton, came and officially pronounced the disease Small-pox. At this decision, a

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part of our community led by a few ignorant of the lesions of Small-pox, who, either for the sake of personal notoriety or because they possessed the spirit of contrariety, were anxious to over-turn this decision, consequently, money was raised and Dr. George Henry Fox of New York city, Specialist on Skin Diseases, was sent for; he came to Hardwick August 3d, and, after seeing all the cases, pronounced the disease to be small-pox, fully substantiating the diagnosis of the State Board of Health. A suitable house was engaged for a small-pox hospital, about a mile from the village, all cases able to be moved were taken there, and from July 25th, there were no new cases until July 31st, from the latter date to August 16th, the date of the last case, there were twelve cases, making thirty four cases in all of varioloid and small-pox, thirty-three of the discrete and one of the confluent form. They all recovered and the last case was discharged from the hospital Sept. 24th. The history of the discrete form was as follows: The stage of invasion was ushered in with a chill, followed with a series of chills lasting in several instances twenty-four or thirty-six hours, the temperature quickly rose to 103 to 105 degrees, there was headache, severe lumbar and sacral pains accompanied with nausea and sometimes vomiting, the skin was bathed in profuse perspiration, which continued through this stage, there was great thirst, the tongue was coated with a heavy, yellowish white fur and the breath was fetid, patient was restless and often unable to sleep. These symptoms continued until the fourth or fifth day, when the eruption came out, and the fever declined to near normal. The eruption as a rule made its appearance first on the face and extended over the whole body, including the

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palms of the hands and the soles of the feet. In many cases, it first appeared as small red spots or macules, which rapidly became elevated and hard forming papules; in other cases, it appeared first as a papule. The superficial layer of the skin only being involved, the papule feels like a shot in the skin and not under the skin as has been described. Twenty-four hours after the first appearance of the eruption, a clear fluid made its appearance in the papules, which became vesicles. These varied in size, some attained the size of a small pea and became slightly umbilicated while others remained very small with no umbilication. When the eruption was well established, the distressing symptoms subsided, the appetite returned, the patient many times getting up saying he felt well and expressing a desire to go about his work. From the sixth to the eighth day, the vesicles became fully distended, their contents gradually changed, some became opaque, the lymph cloudy and did not become pustules but desiccated, unruptured, the inspissated lymph forming small, brown, flat and slightly raised prominences under the epidermis. Others became purulent. This stage occupied about two days and suppuration was established about the eighth or tenth day of the disease and the sixth of the eruption. The pustule desiccated, ruptured or unruptured, as the case might be and fell off in a week or sometimes less exposing a flat,reddened,healed surface or epidermis where usually a little desquamation followed, leaving little or no pitting. In this stage there was little restlessness, the mind was clear, the appetite good, and the patient complained of little but the discomfort arising from the pustules which rendered the skin tender to touch and pressure. Secondary fever was only present in a few

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cases, the face being slightly swollen, especially the nose and eye lids. One case was accompanied with keratitis. These were the symptoms of the discrete form, and while many cases were mild some were more severe.

There was one case of the confluent form, Miss Madge M., taken sick July 31st, had the usual symptoms of the confluent form, was not able to be moved to the hospital until Sept. 4th, five weeks from the day she was taken, was then moved on a bed. She remained at the hospital twenty days and is now making a good recovery, but the face is badly pock marked. During this epidemic we had several cases termed by various writers variola sine variolis, small-pox without the eruption. The following case related by a writer on this subject is interesting as illustrating this form of the disease as well as the occurrence of variola in the foetus. "During a severe epidemic of small-pox a mid-wife forty years of age, in the eighth month of pregnancy, fell sick with rigors followed with violent fever, headache, pain in the back, etc., apparently the initial stage of small-pox. On the fourth day, however, she was free from fever, and in spite of the most careful examination exhibited no trace of the expected eruption. Ten days after the commencement of the disease, feeling perfectly well, she gave birth to a child covered with small-pox eruption, evidently just appearing, which developed still further and in three days terminated in death during the stage of suppuration." Before leaving the subject of small-pox and in view of its prevalence in various parts of the country, we would call your attention to the importance of a correct diagnosis. Mistakes are sometimes made through the lack of sufficient acquaintance with its lesions, and at other times,

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owing to the mild type of the disease, extreme care should be taken to ascertain with certainty whether the disease is variola. If it is and is not recognized as such, the consequences to the community may prove disastrous and furthermore if the cases are not isolated, will in course of a comparatively short period develop into virulent confluent small-pox. The diseases which in the early stages are most apt to occasion difficulty in diagnosis are measles, varicella, scarlatina, febrile lichen, and some of the skin diseases. For the first few days during the initial stage, we cannot be certain what febrile disease is approaching, since the symptoms of this stage are similar in many respects to those of other acute eruptive diseases, as child's fever, headache and nausea with vomiting, but the intense lumbar pain which accompanies these symptoms in small-pox is rarely found in the other diseases.

In some cases of small-pox the pain in the back is not so pronounced and its absence does not exclude the possibility of that disease. The fall of the temperature and disappearance of the symptoms of the initial stage after the eruption is established is a strong diagnostic point in favor of small-pox and it does not occur in any of the eruptive fevers. In measles, the eruption first appears on the fore-head and temples, extends rapidly over the face, neck and trunk but more slowly over the lower extremities. The confounding of small-pox with measles usually occurs in the papular stage of the eruption. The papules of variola are smaller and have a hard shot like feel, those of measles are larger and softer. Vesicles are to be sought for and if found with umbilication, decide the question. The eruption of scarlatina appears on the

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second day about the neck and chest, is diffuse and extends rapidly over the whole body. The faucial symptoms are more pronounced in scarlatina. Miliary vesicles are sometimes met with. They occur usually about the sides of the neck and upper part of the chest, are small in size, do not umbilicate, dry up in a day or two and desquamate. The eruption of febrile lichen appears on the second day as small papules on the trunk and face at the same time and does not vesiculate. The diagnosis of a mild form of small-pox from varicella is not always an easy matter. Varicella is a disease principally of infancy and childhood and is said by most writers to be rare in adult life. There is scarcely any systemic disturbance, though there may be a mild stage of invasion lasting twenty four hours, rarely longer. The eruption is vesicular almost from the beginning. They may attain the size of a split pea but more are not larger than the head of a pin. As a rule, the vesicles are not found in the palms and soles and when found there, are along the borders of the hands and feet and not in the center. The eruption rarely proceeds beyond the stage of vesiculation. There is but a slight red base, if any, to the pock of varicella, while in variola, the red base is prominent and always present. Small-pox was in several instances mistaken for impetigo-contagiosa, an acute inflammatory contagious and auto-inoculable disease, common among infants and young children. It may be accompanied by mild systemic disturbances but in many cases no general symptoms are to be observed. The eruption consists of slightly raised flat vesicles, small in size but rapidly spreading until they become little blebs, more commonly found about the mouth, chin, nose and hands. Crusts form in a few days,

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usually yellow or straw colored, the disease may extend from place to place by auto-inoculation. From small-pox, the appearance and distribution of the lesions will distinguish the affection.

Discussion by Dr. C.S.Caverly : I can hardly presume to add anything to the complete record of this epidemic described by Dr. Darling, the efficient health officer of the town where it first started. What I want to call your attention to are some general principles regarding the diagnosis of this disease.

For two years this disease has been prevailing in various parts of this country ; it was imported, without any doubt, from Cuba by the returning soldiers. The South and West have suffered chiefly from this mild form of small-pox. We have been exempt in the State of Vermont until this summer. I am not prepared to say that we are the only state in the country which has been exempt, but I feel quite confident that is the case. I think if you will look over the reports published you will find almost every state in the country has been mentioned in the last two years except the state of Vermont.

At the time this first case at Hardwick appeared, the very day or week, there was under discussion at a meeting of the American Medical Association at Atlantic City, the diagnosis of this disease. Those who are members (who have the Journal) will find a few weeks back the papers that were read at that meeting on this subject and the discussions that followed. To us of a younger generation, who are not really veterans in the service, small-pox brings terror. We may never have seen cases of small-pox previous to this epidemic. I have never seen but three cases. Our knowledge of small-pox is gained from the writings of

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men who have had experience, and their knowledge is acquired like those of our older practitioners who have had experience with the disease. That, as described in the text books, is really a very different disease in most of its characteristics from the types we have had recently. I don't think any of us who have not had a large experience in small-pox are competent to criticise those who vary with us in the diagnosis of this disease. I think, as I say, if you will refer to the discussion of the papers at this meeting of the American Medical Association, you will find there were men there of large experience in this disease and others, who were perhaps better qualified than most of us to pronounce upon the diagnosis, and who contend that this was not small pox; therefore, the thing that I want to make especially emphatic is that we should be charitable with men who have had experience in small-pox and who question our diagnosis now. I personally believe thoroughly with Dr. Darling that this was true small-pox. I don't see why —reasoning by analogy,— we should not have mild cases of small-pox as well as mild cases of diphtheria and many other diseases. This was a mild form of the disease, but the name "small-pox" was what frightened people,—what has always frightened them, and perhaps always will. In view of the recent large experience with this disease in this country, and with our personal experience in this state, we know more than we did two years ago. I had the pleasure, or otherwise, of seeing these cases at Hardwick late in the epidemic. And there was no question,— would be no question in anybody's mind in regard to one case that I saw there in the confluent form. It was one of the sickest patients probably that ever got well and one

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of the most revolting cases that I have ever seen. I presume no skeptic would question the diagnosis of this case. If this was true small-pox the other cases occurring at the same time and with the same exposure must in all reason have been. While then, we are bound to treat individual opinions as to the true nature of this disease with respect, as health officials we are bound to be guided by the consensus of medical opinion the country over as to the diagnosis in this unique epidemic, and give the public the benefit of any reasonable doubt.

Dr. A. T. Woodward:—I would like to ask the question, —how long it took one of these vesicles to mature; how many days from the time it commenced, so you knew it was going to form a vesicle, before it matured?

Dr. Darling:—The sixth day of the eruption or tenth day of the disease.

Dr. A. T. Woodward: Were any cases vaccinated?

Dr. Darling:—No.

Dr. A. T. Woodward:—It is a difficult matter to determine whether it was small-pox or not. I have been through an epidemic,—it was when I was practicing in Castleton,—that is my native place and I didn't have much to do until that broke out and then I had 30 cases; they buried three before it was acknowledged it was small-pox. Not a man there,—and there were Drs. Goldsmith and Perkins, and Professor Switzer of New York, and other men who consulted with me, and they called it malignant scarlatina. I don't think it is an easy matter to diagnose in the early stages of the disease. I think it would have been a good plan to have vaccinated the cases at Hardwick,—you could have told then.

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By Dr. Goss :—In the town of Hartford we have had some experience with small-pox ; we succeeded in preventing the spread of the disease, I am glad to say, and now the time has nearly expired for any new cases. The 4th of September I was called to a little paper mill village, Wilder, to see a young man whom it was reported was suffering from being poisoned with poison ivy. I looked into his case and told him I guessed he was elected for small-pox. I went to the Junction to get our health officer, Dr. O. W. Daly to look at the young fellow. He said he had never seen a case of small-pox and he'd be d——d if he wanted to. But under the circumstances he concluded to go up and see the case. We decided to send for Dr. Holton, and he agreed with us that it was a case of small-pox. I can't see any use in discussing the matter, if you find the pustules, I don't care whether they are umbilicated or not. We have one case still in the "detention hospital," —Dr. Holton gave it that name, he said it sounds better than "pest house," She is out of danger but now we are simply holding her there for safety. The history of the cases are almost identical with that Dr. Darling has given. I am not a specialist in the disease of small-pox, but I don't hesitate in saying this was small-pox. I vaccinated 600 persons in three days to prevent the spread of the disease, and I thought I did a good job. Our "detention hospital" is not a large building, being 16x14 feet ; it was built in nine hours,—but it has been large enough for our needs. I have used Wampole's antiseptic solution to wash the patients in ; have burned all the stuff they had around them, and disinfected everything possible, with Formaldehyde gas.

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Dr. H. D. Holton.—In Kansas they had a year ago variola which was called chicken-pox but was ultimately recognized as true small-pox. There is no question but that there are modified forms of small-pox, the same as scarlatina. In the Province of Quebec they had in six months 800 cases of this mild form of the disease, without any deaths. It was recognized and treated as small-pox. A little later in Montreal there were 14 cases and seven of them died. The cases in Vermont came at a favorable time of the year when it would naturally be milder. When there is a question about any eruptive or contagious disease, the safest thing,—the only thing to do, is to temporarily quarantine the patient until you have made a diagnosis of the case. There is a good deal of credit due to Dr. Goss and Dr. Darling and their helpers for the measures they used to stamp out the disease. The pustules take on different forms;—some are crystalline—in some the serum seems to harden; instead of spreading out it sticks up, the so called horn-pox, these forms were seen at Hardwick.

Dr. J. H. Jackson.—I propose that the members of our profession present offer our sympathy to Drs. Darling and Goss for the trials they have endured, the heroic work they have done, and our thanks for the descriptions they have given us; that they may know that we appreciate the seriousness of the responsibility that has been laid upon them in the last few months in the treating of this disease.

Dr. R. G. Goss.—There were two cases at Hartford that it seems to me we should not pass over. These were cases on the border line. And in these cases you must always give the public the benefit of the doubt and quar-

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antine. These cases were so doubtful that one of the members from Dartmouth Medical College was called to see them, and a physician from New Hampshire. They made a written statement which came just as near to saying it wasn't small pox and not do so, as was possible. But I want to say that both of those cases are pitted. One thing more: In adults there is no such thing as chicken pox. I have never seen a case,—that will help you in diagnosing your case. If you have a case like Dr. Darling and myself have described, just stick up your card for small pox, and you will be safe.

Dr. C. W. Peck.—This discussion suggests an idea to my mind which I would like to call your attention to. The State Board of Health recommended or advised vaccination throughout this state, and I think it is an understood fact that very few towns conformed with that suggestion. I think it would be very nice for the State Board of Health if they could bring up some legislation by which vaccination should be made compulsory in the state of Vermont. It strikes me it would help us in these epidemics of small pox. In other countries children are obliged to be vaccinated. It is a big mistake such is not the case in this country; it should receive the attention of the State Board of Health.

Dr. George Roberts.—I should like to ask some of the members of the Society if they are of the same opinion as Dr. Goss in regard to chicken pox in adults. We had a severe epidemic of varicella in Wales and I think I saw as many as six adults sick with it. I think it is important to know this, especially if small pox should become prevalent,—whether or not there is varicella in adults.

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Dr. H. D. Holton.—Dr. Fox, in speaking to me about this matter, said: "In the first edition of my work on skin diseases, I said there never was a case of varicella in adults,—in my second edition I said 'hardly' ever."

Dr. R. G. Goss.—Dr. Osler, the best authority on small pox, says that in some 15,000 cases he never saw a case of varicella in adults.

Dr. H. D. Holton.—I think it would be well to ask the State Medical Society to do something about compulsory vaccination.

Dr. C. W. Peck.—I think we might have an expression of those present at this meeting.

Dr. H. L. Newell —I would move you, sir, that the Chair appoint a committee to draw up a resolution to be presented to the Society at a later date, looking towards legislation,—an expression of this society in the matter of vaccination.

Motion seconded by Drs. Hawley, Platt and Peck.

Dr. Edw. R. Campbell.—It seems to me it would be better to have an expression of the Society in meeting assembled, and I would move you that it is the voice of the Society, and their best judgment, that vaccination should be made compulsory in the State of Vermont.

Seconded by Dr. Davenport and carried.

Dr. H. L. Newell.—I would move you the discharge of this committee which has been appointed for the purpose of drawing up and presenting a resolution in regard to compulsory vaccination.

Motion seconded by Dr. Platt. Committee discharged.

Dr. C. W. Strobell.—I think the committee should be retained; we want a resolution adopted by this Society to present to the legislature.

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"The Use and Abuse of Drugs in Vermont."

By A. P. Grinnell, M. D., Burlington.

I approach the subject as entitled on the programme with a certain amount of embarrassment, and at the same time willing to contribute to you an apology for offering any remarks upon a subject which is so hackneyed and so threadbare as the use of narcotics or stimulants in the State of Vermont.

As the topic of this paper or talk may be considered, the uses or use and abuse of drugs, could not consist simply in the discussion of any one drug, the question would be, what is a drug? The definition given in medical dictionaries may be somewhat different from that given in other dictionaries. The meaning of the word "drug," carried to its farthest limit in the direction of commerce, is when a thing is considered a drug on the market,—and at times an individual is one. As we understand the word in Vermont it is the use or abuse of those things which are narcotics, anodynes or stimulants, and the subject has been so discussed and "cussed" by laymen and by the profession that I believe it is within our province, as members of the medical profession, to put a stamp upon this matter which will have an effect for or against the use and abuse of such things.

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There is no one who can so well judge of the use of a narcotic, an anodyne or a stimulant as a doctor. There isn't a day in your life that you don't come in contact with patients who suffer from the use or abuse of drugs. We are responsible a great many times for this, and unnecessarily so. Nevertheless, we must shoulder the responsibility of having prescribed, recommended, or directed the use of these things which resulted, does result, and always will result in misery and horror.

I have for a great many years believed, and I believe I voice the sentiment of every doctor who is here, that every human being craves an artificial stimulant. Ask yourself what your stimulant is,—what is mine,—what is your neighbors? You all have one. After 30 years' experience of practice I can truthfully say that I believe every human being craves an artificial stimulant. What is stimulant? Something that makes up for what we don't have naturally, and you seek it. You may select one which is harmless or harmful. You may select one that is harmless to a certain extent but its remote effect is disastrous. You may select one that will produce in you destruction and death, or in your progeny. If you should ask any one of your neighbors, "What stimulant do you take?" and that person was an advocate of what is called in Vermont prohibition, which means the prohibition of alcohol the least of all, they would say "nothing." Analyze his daily or her daily life: tea, coffee, opium, tobacco, quinine; these are in the list, and there isn't one that can say they don't take one or the other. What is stimulant to one is not necessarily to another. I am not advocating the use of any one stimulant,—I am not in the stimulant business,—I have nothing to sell. I am simply

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going to point out from statistics that have taken me eight months of hard work to gather, what Vermont uses and I think I can prove it to you. To some men an alcoholic stimulant is everything they seem to need to supply a want which they feel they have. All are not so. One of the most noted post prandial speakers this world ever produced never takes anything for dinner but a glass of champagne; without it he feels lost; with it he can recall anything he ever heard in his life,—and we wait for the morning paper to hear what he said the night before. Another man whose utterances have a world wide reputation; who has made speeches in France, England and Germany which electrified them and reflected credit on us, told me that his speeches were always prepared under the influence of black tea and he ate nothing for sometime before he was going to speak. Another man who was responsible for the existence of the prohibition law, as it is called,— he is dead, and in speaking of the dead we should do so with feeling and not contempt,—came to me for treatment. I told him under no circumstances to take acids. He said, "Do you mean to tell me that I can't eat pickles?" I told him no, that he had a disease of the kidneys and bladder which made the use of acids impossible. He said, "I have pickles three times a day; made out of everything that it is possible to make pickles from; I can't get along without pickles." And yet this man went to the State Legislature and said, "I can't drink beer, therefore you shan't." I firmly believe that an artificial stimulant is desired by or acceptable to everybody. The selection of that one stimulant depends upon the environment, occupation, and peculiarity of that individual. And it is only such a person as is capa-

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ble of curbing his disposition and passion to an almost unheard of extent who will say that every person is not in need of an artificial stimulant. Let me tell you a little incident in regard to one of the most notable temperance lecturers that ever appeared in this State,—he was a patient of mine once,—he was a temperate man and did a great deal of good. His wife said to me once: "Doctor, isn't it possible to stop my husband drinking so much coffee? The coffee pot is limited to four cups,—he takes three of them." And yet this man would not be guilty of taking stimulant. Another man, a public speaker, told me it was impossible for him to lecture unless he was under the influence of compound tincture of ginseng.

In the early part of January I issued to all the druggists in the State of Vermont,—130,—this letter. I inclosed in it a stamped envelope directed to me, and requested replies to the questions. I will read the letter:

(reads letter)

I sent 130 of these to the druggists of the State of Vermont; I received replies from 106. Since this count was made I have received a few more. I also sent a letter to the stores called "general stores",—not drug stores,—where they sell material of this kind,—such places as Monkton, Addison and Shelburne,—172 of them. I sent letters to them, but did not get responses that were satisfactory. Many of them refused to reply and kept my stamped envelope. Some returned the letter saying they thought there was some investigation going on, and did not care to answer the questions.

I did find out that of all the physicians in the State of Vermont, 690 of them, 90 per cent of them dispensed their own medicines, or did not purchase them of the druggists

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in the place where they live, and if they did the druggist said he did not include that in his sales given me. All the sales he made were to ordinary customers.

I had trouble in getting anything from wholesale drug stores in the state,—5 of them; they thought I was playing some game on them. I learned there were three manufactories in the State of Vermont, where they manufacture these things,—crude drugs,—paregoric, laudanum, essence of peppermint, wintergreen and valerien. They sell a great deal but they wouldn't give me their figures. Therefore, what I give you could be multiplied by five and be below the consumption,—because I give you nothing in the composition of patent medicines,—cough medicines; nothing dispensed by physicians; nothing that is dispensed by these three manufactories,—simply the retail drug store business of 170 stores. The amounts given in some instances were so large that I thought they must have estimated by the year instead of by the month, and I sent the list of questions back with another stamped envelope; but they were returned with the notation that it was "all right."

(Letter read that was sent to druggists)

I don't want to give any names of drug stores, or individuals, or places,—but when I tell you that a place so small that it hardly appears upon the map sells every month 3½ lb. gum of opium; 6 oz. morphine; 5 pints of paregoric; 5 pints of laudanum and 3 oz. powdered quinine;—it will be hard for you to believe it.

In another town where there are two drug stores,—one refused to give me information,—and in those cases I put it down as zero,—this one store sold 3 lb. of opium; 1 gallon of paregoric; ¾ of a gallon of laudanum; 5 oz. of powdered quinine and 1000 2 gr. quinine pills.

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Another store situated not many miles from here sold only 5 oz. opium; 2 oz. of morphine; 8 quarts of laudanum and 6 quarts of paregoric,—and a retail drug store.

A town of considerable importance,—one of the doctors is here to-day,—the druggist said he didn't sell very much of those things,—so I put it down as zero on my list.

Another druggist in a different town said "I could not tell you because I have no time to look over my books." So I put that down as zero. Another one said he sold 80 cents worth of a certain drug and $2.50 worth of something else;—all these I have put down as zero. Still another said "my sales in these goods may amount to $25 a year". That was also put down as zero. And another "I am unable to state, but it is a very small quantity. I sell to only two or three persons and they use small quantities."

I am giving you points you have not thought about, but we must think about it. Another incident: A man down on the border of the lake near where Dr. Platt lives, says: "Most of our customers go across the lake where it is cheaper." I put his down as zero too. Now then in the drug stores, 160 of the 172 stores in the State of Vermont, they sell every month 3,300,000 doses of opium, beside what they get in patent medicines, and beside what the doctors dispense,—which gives one and a half doses of opium to every man and woman in the State of Vermont above twenty-one years, every day in the year. (By a dose I mean 1 grain of opium, one-eighth grain morphine, one-half ounce paragoric and twenty drops of laudanum.) And a half of one dose to every man, woman and child in the State of Vermont every day in the year. And then there is the consumption of certain articles that I was rather surprised in,—chloral, Indian hemp and co-

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caine. Do you say that quinine is not a stimulant? I say a two grain dose of it will flush your face as much as a drink of whiskey, unless you are used to it. You can hardly find a man traveling that hasn't a bottle of quinine in his pocket,—he says he is afraid he will have a cold. The amount of quinine consumed, considering 1 grain a dose, is two grains a day to every man and woman in Vermont, above twenty-one years, every day in the year, assuming there is 320,000 population—that was the last census we have. The other items are not quite as much.

For several years I appointed medical examiners for insurance companies in Vermont and New Hampshire, and I was told that the companies took extra precaution to see if the examiners had taken the Keeley or other cures since they had been graduated from college. The companies told me that the States where they had the most trouble with drunken doctors, were prohibition States, and they showed me statistics in regard to it. The presiding officer, I don't know his title, of the Third Cavalry up at Fort Ethan Allen, told me that he had had charge of troops in the West, and that he never had his men in the guard house for drunkenness as he had in Vermont. I can't understand it, but it is true. He had been in Oklahoma in charge of troops; he had never had any men in the guard house for drunkenness there,—but he had trouble here. When he let the men out for an evening they would come back drunk. But I am not talking so much about alcohol as about the other things. I have been so astonished, so amazed, at the result of my investigation as I have given it to you; but I am prepared to prove it. I have made no statement I can't prove; and that statemant which I have made can be justly multiplied by five

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and then be below the actual consumption. Think of it, gentlemen, what will be the condition of our progeny? Should we not look upon them with pity—not scorn and contempt—but as diseased, suffering mortals; instead of censuring we should pity them. Not a word is ever said in our legislature in regard to anything but rum. Look what the Government has done in the last eighteen months from reports made by Langworth & W———. Their book is one of the most wonderful books I have ever seen. It calls for an amount of labor in preparation I cannot conceive of, to show the amount of alcohol that is and will be absorbed by the human race, to its benefit. Every kind of narcotic has been experimented upon by them, and if this report could be put before the Legislature of the State of Vermont, it would open its eyes to the fact that there is something beside alcohol that can spoil moral development and mental capacity.

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Puerperal Septicaemia.

By E. M. Pond, M. D., Rutland.

It is not my intention in this paper to go into the full details of puerperal septicæmia, but simply to call attention to a few points I have observed in private practice. It has been my fortune or misfortune to see many cases in consultation. Puerperal septicæmia is a preventable disease ; it is a wound infection and arises from septic materials being carried into raw surfaces at the time of confinement. A woman may be confined in an infected house with septic cases around, with even contagious diaeases, and yet if the confinement is aseptically carried on no infection will follow. She may of course contract diphtheria or scarlet fever, but they will run their course as such and not as septicæmia. If, however,these poisons are introduced into the wound by the physician,assistants or by instruments or dressings,we then have septicæmia with all its pathological changes. While as a rule the physician or attendants are at fault there are cases in which it arises from causes within such as pus tubes, pelvic abscesses, etc.

I saw one such case, a woman of about 40 who had had five children,the youngest being three. I saw the case before pregnancy occurred and diagnosed a pus tube of the right side and urged an operation. The tube was quite large and fluctuation was marked. I told them

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should she become pregnant it would be a source of danger.

The time for operation was set, but she changed her mind and also physician. Some time later she became pregnant and was delivered. The family afterward told me that a day or two later she became very sick with peritonitis and died a few days from the time of confinement. In my mind there was little doubt that the cause of death was a ruptured pus tube.

These cases however are rare and when a physician has a case of septicæmia it is generally from preventable causes. A confinement should be conducted as carefully as an abdominal section, the most thorough asepsis should be observed throughout the confinement and also during the convalesence. Pads of sterile gauze should be used and not those so often prepared by the family. The douches postpartum should never be used, except possibly one directly following the delivery of the placenta, or where instruments are used, except as symptoms demand them. The uterine cavity is supposed to be aseptic white, the vagina is not; by reversing the flow and carrying secretions from the vagina to the uterus we may favor infection. For those who have not used the Symms position for delivery I would suggest that they try it. The parts can then be kept under the inspection of the physician and by the free use of sponges of absorbant cotton the parts can be kept clean.

Another source of infection is that the family are not prepared with proper dressings and that the physician does not carry enough of the necessaries of confinement with him. After delivery the parts should be thoroughly

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inspected, by a good light and digetal examination. Lacerations and contusions should be treated as wounds in other parts of the body.

A normal confinement should be followed by no fever and when it does occur there is something wrong. The so called milk fever that occurs on the third day should not occur and is generally due to either absorption from the intestines or sepsis. If a cathartic does not clear it up no time should be lost in findlng the cause.

Whenever fever or a rapid pulse are found they should be considered as septic and thus treated, unless a definite cause is found. The uterus and adjacent tissues are so richly supplied with lymphatics that if the infection is not stopped at once it may soon be beyond our reach. Here more than in most diseases the old saying "that a stitch in time saves nine" holds true. In making our diagnosis we must remember that the infection may be from a lacerated perineum or vagina; if so we may have pain in the thigh or groin radiating to the knee, or we may have a phlebites of the leg: if we remember our lymphatic supply we will at once see why.

The infection may occur from the cervix and an abscess in the pelvic cellular tissue result and lastly the infection may start in the uterus possibly at the placental sight and extend either by the tubes or lymphatics to the pelvic peritoneum; as a result we may have purulent salpingites—ovaritis or peritonitis.

By recalling these complications we see at a glance that the generally adopted routine of curettment and irrigation of the uterus is not in many cases the whole treament and that many demand an early operation of vaginal or abdominal section together with the attention of the endo-

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metrium. And here I may say that gauze packing filling both uterus and vagina with an ample pad over the vulva is always of advantage in promoting drainage.

We have a form of infection, sapremia, that occurs in many cases; this generally arises from pieces of membrane or clots being retained and is promptly relieved by uterine irrigation: if allowed to go on Septicaemia would follow.

The diagnosis at times is difficult but unless a posative cause is found these cases should always be treated in the supposition that they have Septicæmia.

I delivered a woman a few years ago, using every aseptic precaution: however on the third day she was taken with a chill—a temp of 104 and pulse 140. She had had malaria and had had attacks like this at intervals. As a safeguard the uterus was irrigated and the patient carefully watched. No cause was apparent. The fever and other symptoms subsided under malarial treatment. This attack was like her former ones but coming on under such conditions it gave me some anxiety, although feeling confident as to its cause.

One of my friends attended a young woman in her first confinement. It was carefully done and every precaution taken; a tear of the perineum was sutured: on the 3rd day there was a rise of pulse and temperature. The following day I was hurriedly called and found the patient with a temperature of 107½ and pulse 150 or more—the abdomen was distended and general symptoms of sepsis were present. Ether was given—the perineal sutures removed and the wound reopened—the vagina and uterus were thoroughly cleansed and curetted. Careful examination showed no signs beyond the uterine cavity—vagina and perineum. After thorough irrigation with Bichloride

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and saline solutions and hydrogen peroxide the uterus and vagnia were packed with gauze and a large vaginal pad applied. This was repeated twice daily for a week or ten days. The temperature and pulse began to drop at once and she made a good recovery. General treatment was of course followed out.

While a high temperature is alarming it is oftentimes not as dangerous as a low temperature and rapid pulse. The pulse after confinement should be carefully noted and an increase in frequency should always be considered a danger signal. It is far more alarming to see a rapid pulse than a high temperature and any increase in pulse rate should be looked upon as a danger signal.

Infection as a rule occurs during the first week and the pulse and temperature should be recorded morning and evening during at least the first week. The careless method of attending a confinement and then making but one or two visits should not in these days be countenanced.

I have seen two cases of septicaemia following two and three weeks after confinement. In each case had the patient been up and around and in each case there was an old retroflexion with improper uterin drainage. Dilation, curettment, with irrigation and gauze packing effected after a time a cure. The case occuring three weeks after delivery had a gradually rising pulse before signs of temperature occurred.

I remember two cases of infection taking the form of so called milk leg, in each case the temperature was low and the pulse high ; the uteri gave but little signs of involvement and the tubes, ovaries and pelvic peritoneum appeared normal. Both cases died. In such cases the uterus should have, of course, attention, but septic wounds

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should also be looked for around the perineum and vagina and while the infection is beyond, all surfaces should be cauterized or dressed surgically. General treatment should be energetic and should include anti-streptococcic serum. While the results of this serum are at present undecided, sufficient good has been done to warrant their employment as an aid to other means.

At times a patient may have grave symptoms, a rapid pulse of 140, a temperature of 104 or 105, and yet physical examination remain negative. In these cases there may be a small abscess of the ovary or other parts. A case reported a few years ago illustrated this: The case, one of puerperal septicæmia, ran a long course; for five or six weeks the pulse was about 140 and temperature 103 to 105. The physical examination was negative. Finally an exploratory incision was made and an abscess of the ovary found; it was small and contained less than one-half dram of pus. An immediate recovery followed.

Acute disease may often complicate the puerperium. Appendicitis may develope or pelvic peritonitis or pelvic abscess may simulate it. I was called to see a young woman who had been delivered about 10 days. She had been doing well and was up and around. She was suddenly taken with severe pain in the right side—the lower right rectus muscle was ridged and local tenderness present over McBirney's point. By vaginal examination the uterus was found fixed and a sensitive undurated mass felt in the posterior cul-de-sac. I saw her again two days later; the mass had softened and deep fluctuation was noted. An incision in the posterior cul-de-sac was made per vaginam and about one-half pint of fetid pus removed.

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The patient made a slow but perfect recovery. These cases often remain well afterward.

At times the vulva, vagina and uterus may be covered with a membrane simulating diphtheria; sometimes the bacteriological examination shows the Klebs-Lef. bacillus, in other cases not.

I was called to see a young woman after her first confinement; she had been sick about a week. Upon bimanual examination the uterus was found large and soft, but the peritoneum was free. By inspection the vulva, vagina and uterus were covered with a white diphtheretic membrane; the parts were soft and bled easily; the pulse was rapid and the temperature low. She died a few days later. The physician who attended her had two other cases of puerperal septicæmia and also had several cases of diphtheria. This simply illustrates the care that should be taken when one has contagious or septic diseases. If a physician has had a contagious or septic case, how soon ought he to attend a confinement case? Just as soon as he has rendered his clothing and person aseptic. If clothing has come in contact with contagion it should be at once sterilized; simply removing the clothes, and hanging them in a closet is not enough; they should have careful attention.

So soon as the physician has taken a bath and thoroughly cleansed his hands and arms by some reliable method, and put on clean clothing, he is ready to take a new case.

In order to sterilize the hands properly they should have attention at several different times—the permanganate method is as reliable as any. Special care should be paid to the finger nails and hair.

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I have drifted at random in this paper, but hope it may lead to a discussion, for they are cases we all meet in one way or another.

DISCUSSION.

Dr. O. C. Baker, Brandon.—One point in my practice is not borne out in the paper. The point where the writer says no rise of temperature should occur after confinement. My observation and experience does not bear that out. I don't remember of but one case where the temperature remained normal all through. I get a rise of a quarter or half degree,—I think it is usually a half degree. I never feel alarmed if the temperature is 99° or 99½°.

Dr. C. S. Scofield.—We may also have what is called an "emotional temperature," occurring in nervous cases, which rises suddenly, but by keeping the patient quiet, and giving, if necessary, a dose of bromide of potassium, the temperature comes down again in a few hours.

Dr. J. M. Hamilton, Rutland.—I was assisting Dr. Pond in one of the dirtiest pus cases I ever saw and very soon after, before I had a chance to change my clothes and clean up, I was called to a confinement case. I used rubber gloves, which I think have come to stay, and I did not have a rise of temperature, I do not often have. I think every doctor should have rubber gloves in his bag—and by the way, we ought to have our bags packed for surgical cases. If we have a case we are ready for it; we should go loaded. We should carry instruments for repairing lacerations of the perineum.

Dr. C. S. Scofield.—As one of the preventives of Septicæmia I would advise the use of antiseptic dressings. I first used antiseptic dressings while attending an outside

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case for the Boston Lying-in Hospital, in '82; a number of cases of deaths from septicæmia had been reported at that time. My case developed high fever with scanty and very offensive lochia, which entirely disappeared after the faithful use of the carbolized douche and antiseptic dressings. Later this treatment was adopted in all cases in that institution.

Dr. E. M. Pond.—In regard to rise of temperature, I think my statement holds good. Wherever there is a rise of temperature there is an absorption of septic materia,—this may be from the abdomen or the intestines. It may also come from laceration of the soft parts.

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Lobar Pneumonia.

By Dr. W. L. Heath, Richmond, Vt.

Lobor pneumonia is an acute disease, in which a specified parasite invades the air cells of one or more pulmonary lobes, where it grows in the fibrinous medium exuded from the functional capillaries and generates a toxin that affects the system at large with constitutional disturbances of varying intensity. The fever terminates abruptly by crisis. The diplococcus pneumoniae is invariably found in the diseased lung. Pneumonia is a wide-spread disease. It prevails at all ages. Children aud the aged are quite as susceptible as adults; males are more frequently affected than females.

Debilitating causes of all sorts render individuals more susceptible; alcohol is a very predisposing factor. No acute disease occurs with such frequency. The disease occurs in all climates, but is more common from December to May and especially March, April and May when changes are very sudden. Cold has often been thought to be a predisposing cause and sudden cold is often followed by the disease, but oftentimes there is no history of cold. Pneumonia often follows traumatism. A strong proof that pneumonia is an infectious disease caused by micro-organism is its occurrence in epidemic form, oftentimes two, three or more cases in the same household. The diplococcus pneumoniae of Fraenkel is the most

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constant organism in Lobar pneumonia and is now believed to be the specific cause of the disease. The diplococcus pneumoniae may be present in healthy individuals but is always present in the disease. According to the dominant view, pneumonia is an infectious disease caused by this diplococcus which has its seat of election and produces its chief effect in the lung but it may under various circumstances invade other parts of the body. It is not improbable that the predisposing causes as colds, age, sex and debility lower the vitality,render the individual more susceptible, thus changing the character of the tissue soil, so that the virus can grow and produce its specific effect. Recently very interesting studies have been issued on the production of immunity and upon the care of pneumonia. Immunity is readily obtained in animals, either by subcutaneous or in intravenous injections of large quantities of filtered bullion cultures. Although rarely lasting over six months, it has also been found that the serum in the body of the animals rendered immune, when introduced in the body of another suffering with the disease has the power of curing the disease. We believe that the pneumococcus produces a poisonous albumen. The pneumotoxin when introduced into the circulation cause elevation of temperature and a subsequent production in the body of an anti-pneumotoxin which possesses the power of neutralizing the poisonous albumen which is formed by the bacteria. In man they hold that during pneumonia there is a constant absorption into the circulation of the poisonous albumen, produced by the bacteria in the lungs. This occurs until the antipneumotoxin is produced. It is then that the crisis occurs. The bacteria is not destroyed but the antidote now exists and neutral-

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izes the toxins as they are produced. In pneumonia we have three stages in the diseased lung, stage of engorgement, red hepatization, gray hepatization. Stage of engorgement, lung tissue would be red in color, firmer to the touch, more solid and on section the surface is bathed in blood and serum, it still crepitates, and excised portions will float, the air cells can be dilated by insufflation from the bronchus.

Microscopical examinations show the capillaries first to be greatly extended, the epithelium swollen and the air cells occupied by red blood corpuscles and detached alveolar cells. In red hepatization the lung tissue is solid firm and always on section the surface is dry, reddish brown in color and has lost its deeply congested appearance of the first stage. A hepatized lung can be easily broken or torn with the fingers, while the healthy lung is very elastic. On scraping the surface with a knife a reddish serum is removed. The small bronchi often contains fibrinous plugs. Microscopically the air cells are seen to be occupied by coagulated fibrin and alveolar epithelium. The walls are infiltrated and the leucocytes are seen in the interlobular tissue; cover glass preparation from the exudate show the diplococcus already referred to. In the stage of gray hepatization the tissue has changed from a reddish brown to a grayish white color, the surface is moister, the exudate that is obtained on scraping is more turbid, the granules are less distinct and the lung tissue is still more friable histologically. In gray hepatization it is seen that the air cells are densely filled with leucocytes, the fibrin network and the red blood corpuscles.

A more advanced condition of gray hepatization is that known as purulent infiltration, in which the lung tissue

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is soft and bathed with a purulent fluid. This stage is the first stage in the process of resolution, the exudate is soft and rendered capable of absorption. In pneumonia all other organs of the body suffer, the heart is disturbed with pericarditis and endocarditis, commonly the kidneys show parenchymatous swelling and at times interstitual changes. The spleen is often enlarged, meningitis is often present, the liver shows parenchymatous changes and often engorgement of the hepatic veins, symptoms you are all familiar with. Chills severe, usually present, followed with fever, headache, convulsions in children and oftentimes coma in the aged, pain in the affected side is often present, cough expectorations at first viscid, then brick dust, respiration rapid and panting.

Pulse elevated, countenance anxious, delirium usually present, urine scanty. Inspection may or may not show any difference between the two sides, usually the movement is least on the affected side; later when consolidation has occurred the difference in expansion is very marked. Mensuration may show a definite increase in the volume of the side involved. The intercostal spaces are not obliterated. Palpation indicates still more clearly the lack of expansion. Tactile fremitus is increased, percussion is from tympanitic to flat, differing with each stage of disease. Suppressed breathing in the affected side is a marked feature in the early stage. At the end of inspiration is heard the fine crepitant rale, fine crackling sounds are heard coming either from pleurisy friction sounds or from minute air cells, rales are very uncertain at this stage, sometimes marked, other times most imperceptible. When resolution begins, mucous rales of all sizes can be heard. During the chill the pulse is small and rapid, but in

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the fever following it is usually full and bounding, but the pulse may be small and rapid from the onset. The number of blood cells are reduced but the special change is in the corpuscles themselves. Gastro intestinal irritation is quite common, tongue white and furred, rapidly becoming dry, constipation common. Herpes quite often occurs, on one cheek a redness is nearly always present, urine scanty and highly colored. Headache common and in drunkards you may get delirium tremens from the onset. Resolution is effected partly by expectoration and partly by absorption. Abscesses may result from purulent infiltration of lung tissue. Fibroid induration may occur but it is very rare. As a rule pneumonia is easily recognized, but I think errors in diagnosis are often made when a more thorough examination would reveal the cause.

I will give the treatment I now use, hoping it will bring out in the discussion many points I have omitted :

TREATMENT.

Place a patient in bed in a well ventilated room at about 65°F. The air should be changed often, clean cloths should be provided to receive the expectoration, and burned with every antiseptic precaution. Wrap the patient in a cotton jacket and apply some counter irritation such as turpentine or mustard. An ordinary amount of liquid food should be given but over-feeding should be guarded against. Water in abundance should be used as it favors elimination from the skin and kidneys.

Experiments have taught us that the life of a diplococcus is very short and that of all known germs this is the most sensitive and hardest to cultivate. Therefore, the first object of treatment is so to act upon the blood and to

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make the fibrin which is exuded from the air cells as unfit a medium as possible, for the growth of germs.

Calomel should be given as it absorbs and affects the activity of the germ formation in the medium and is supposed to have an antiseptic effect in the blood. Quinine may be given and it also has some antiseptic action in the blood, as well as antipyretic action. Creosote is supposed by some to be a specific for the disease and should be given if the stomach will bear it. It is very useful combined with chloroform as an inhalation.

Chloroform in the strong and robust is useful and when inhaled seems to have a controlling effect on the exudate, and to render it an unfit medium for the pneumococcus. Experiment shows this organism very sensitive to chloroform.

Chloroform may be administered in connection with oxygen by adding one or two drams to the water in the wash bottle. Aside from the action upon the germs the chloroform allays pain, quiets the nerves and promotes sleep. Although authorities say that pneumonia is a self-limited disease, not influenced by medicine or treatment, it does seem that the disease can be cut short or limited by careful and judicious treatment in the right time. I have seen a large robust man with every symptom of pneumonia in the first stage relieved by blood letting, and in a few days convalescense set in. It seems that in the robust when the arteries and veins are so distended that we are justified in using our lancets, and although death often follows blood letting I believe it is because we wait too long to have good results. It must be done early. The effect in blood letting in mild cases may be obtained by drawing the blood from the veins and storing it up in the

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arteries. This may be done by drugs that have the power of relaxing the arterial system. Aconite has that power and is a safe drug to be used at this time. Nitro-glycerine will have a prompt action and is said to be very effective, but personally I have had no experience with its use. Oxygen is a very useful remedy but its use should not be deferred until too late. I have seen many apparently hopeless cases recover under its use. To combat the toxaemia already in the system we have as yet no direct means. Serum therapy is suggested but as yet it is in its infancy and I am unable to speak of its merits; we must depend upon the ennunctories. These are the skin, kidneys and the intestinal glands.

Calomel should be given for its effect upon the bowels as well as its absorptive effect. Iodide of potassium combined with the infusion of the digitalis should be given for its diuretic action. Iodide of potassium also has a beneficial effect on the bronchial secretions. Infusion digitalis is the best diuretic, also as it has a strengthening action on the heart and does not often contain the digitoxin usually found in the tincture of digitalis.

Spirits of nitrous ether is also useful, as it produces diaphoresis as well as being a good diuretic. Strychnine is the best heart supporter. Strychnine, 1-60 to 1-30 grain doses, given every four hours, has no equal. Strophanthus is also useful; caffein in the form of a strong coffee is very useful at times.

In all cases with asthenic tendency, alcohol, in the form of brandy or whiskey, should be given early and increased until held in check. I think it is a great mistake not to give alcohol in some form, and ordinarily in very large doses; it is a fact that no intoxication is produced

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by the same amount that would be disastrous in a state of health. I cannot speak too highly of its merits in this particular disease.

Guaiacol, combined with hypophosphites, given early in convalescence. To relieve the cough, codein or heroin should be used combined with the muriate or carbonate of ammonia. Steam inhalations are also very useful and comforting to the patient.

To reduce the temperature, cold is a common practice in hospitals, but in private practice it should not be used unless in very serious cases, when all other means fail.

Phenacetin or acetanilid acts very quickly, and danger in their use is small if used with care and in small doses. 3 grains of acetanilid with the same amount of tully powder is very usefully combined. To relieve the pain, morphine is the most reliable drug and should be used with care.

Thanking you for your attention, I now leave the subject for discussion.

DISCUSSION.

Dr. E. M. Brown, Sheldon—My discussion of the paper which has been read can be none other than commendation of the salient points which have been brought out. To-day it is not proven that pneumonia is dependent upon any one germ, but there are a number of germs which are capable of producing the disease, or are credited by authors as capable of producing the disease. Upon microscopical examination we are able to find the germs which are found in many other acute diseases. It seems to me that until it is proven there is one specific

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germ, we have no positive proof that pneumonia is dependent entirely upon a germ. In the way of treatment, that is a part of this discussion which is particularly interesting to us as practitioners. There are very few of us but what would be able to diagnose a case of pneumonia, even though we have been in practice but a few years. It is a disease where a mistaken diagnosis would hardly be excusable if the disease was well marked. If we bear in mind the usual mode of death in cases of pneumonia, it seems to me we can be governed in the treatment of our cases. In the very early stages of the disease, I fully indorse what was said upon bleeding. I think sometimes, and often times, in a full, plethoric patient, we can save life by drawing blood. When the heart is being crowded by metistatic enlargement, we can relieve it by starting blood and aid our patient over a very critical point of the disease. And later on, if it is necessary, we can support the heart. I feel reasonably sure if I can carry a case of pneumonia along ten days, unless there are complications, I am going to save my patient. And if my patient dies before ten days, ordinarily he dies from heart failure. It is a disease which is rapidly prostrating in its nature. Very often on the third day we begin to feel a weakness of the heart; the pulse is weak and rapid, and the heart shows a tendency to give out. At this time there is no other drug in the materia medica which is so potent a remedy for good as strychnia, either by hypodermic injections or by the mouth. And as we consider pneumonia a self-limited disease, any other than a supportive plan of treatment is not called for. Sustain and steady the heart by strychnia, nitro-glycerine and digitalis; nourish the patient with easily digested food,

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and alcohol, in my opinion, is often called for. It was suggested that creosote would be a proper remedy in cases of pneumonia. To this treatment I would take some exceptions. I should think in an ordinary case of pneumonia that creosote would not be called for, surely in acute stages, and would be objectionable. I would like to ask if the doctor has tried treating patients to any great extent without the use of alcohol.

Dr. C. S. Scofield, Richford.—I think if alcohol is used, it should be given at the crisis when there is danger of heart failure, and continued for a time after. For a heart and lung tonic, I think strychnia is the best of all remedies in pneumonia. For an external application to the chest, I use medicated wool; it is a splendid thing, too, in cases of rheumatism.

Dr. F. L. Osgood, Townshend.—When I first began I studied medicine with men who did not use alcohol at all, —no more than was absolutely necessary. I use it in my cases and the more I use it the more I think I must. In regard to creosote: I have never given it in large doses in pneumonia, but only in small doses and I think it reduces the cough somewhat.

Dr. E. M. Brown.—I would like to indorse what Dr. Scofield has said regarding local applications of wool. If the wool is saturated with glycerine, it improves it.

Dr. F. R. Stoddard, Shelburne.—I don't use the lance. If I wish to get rid of blood I give a dose of saline,—maganesie sulphate. In that way I have reduced the amount of blood and immediately the patient begins to feel better. At the beinning of the case, if I see it then, for a high temperature I give Amorph Aconitine gr. 1-134, Digital-

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in gr. 1–67, Veratrine gr. 1–134, and you will be surprised, if you have never tried it, with the marvelous change in the condition of the patient within 24 or 48 hours. And then very soon begin to use strychnia. With your saline in the first place and strychnia, digitalin, aconitine, and veratine you won't have to give your patient alcohol, and they won't die either.

Dr. W. L. Heath.—I thoroughly believe in bleeding. I had a case of pneumonia, I was sure the man would die, but nature set in and gave him a hemorrhage from which he very nearly bled to death. He lived. Since then I have practiced bleeding. I don't believe in it late in the disease, unless in a very robust man.

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Heredity and the Transmission of the Insane Diathesis.

By W. N. Thompson M. D., Brattleboro.

The fact of the transmissiom from generation to generation of forms and features, and a tendency to the traits and habits characteristic of the family and race, is imprinted in some manner on every being high or low in the scale of life.

A portion of the Jewish system of legislature was based on a recognition of the law that children inherit the physical characteristics of the parents.

Writers of history and fiction alike, speak of the Austrian lip and Bourbon nose,—it is said by Ribot that of all the features, the nose is the one that heredity preserves best. Among the Romans certain families were described by their features, as the Nasones, or Big-nosed, the Labiones, or Thick-lipped, the Capitones, or Big-headed, the Buccones, or Swollen-cheeked.

The transmission of peculiarities of nervous structure and tendency to disease is no less constant, though not always patent.

Heredity comprises a mass of complex phenomena dependent on certain laws of generation. These phenomena have been grouped into certain emperical laws proposed by Ribot.

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They are :—1. Direct heredity, which consists in the transmission of the characteristics of the parents to the offspring, and comprises the great majority of all cases. It may be safely said that the ideal law, the inheritance of tendencies from father and mother, equally, rarely, if ever, occurs. The procreated individual would then be, everywhere and always, the exact mean between the two parents ; on the other hand, the influence of either parent is never entirely excluded.

It is doubtful if so-called diagonal heredity, that is, the descent of the traits of the father to the daughter, and mother to son, be true in any great number of cases.

Children born of healthy parents usually inherit predominantly, the characteristics of the more vigorous parent. If one parent have some one of those maladies, mental or physical, a predisposition to which may be transmitted, some of the offspring, by reason of the introduction of strong counter tendencies, may escape, but it is rare that all do so ; and if both parents be afflicted, the children will rarely any of them be so fortunate.

In the second form, the child instead of resembling its immediate parents resembles one of the grandparents, or some more remote ancestor—this is reversional heredity or atavism. Plutarch mentions the case of a Greek woman who gave birth to a negro child ; when brought to trial, it transpired that she was descended in the fourth degree from a negro. The explanation of this form of heredity is, that the tendencies existed in intervening generations, but was overcome by some counter tendency. It is not uncommon to find among a flock of sheep or a litter of kittens or rabbits, black offspring of white parents. The third form is really a sub-form of the preceding, and

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is seen in the resemblance of a nephew to an uncle or aunt.

Professor Parvin was accustomed to mention in his lectures, the heredity of influence. It consists in the reproduction in the offspring of a second or subsequent union, of characteristics peculiar to the father of the first. Well-marked cases of this kind are uncommon in the human family, but it is not infrequently seen in animals. An English mare was covered by a quagga, and gave birth to a mule marked with spots; she was covered successively with three Arab stallions and produced three brown colts with bands like the quagga. Such cases are not of sufficiently frequent occurrence in the human family to give them any practical importance.

Subject to the same law, with those attributes that lie latent for one or more generations, are others that appear in succeeding generations and at a corresponding period.

Ribot instances one family where blindness was hereditary for three generations, and thirty-seven children and grandchildren became blind between their seventeenth and eighteenth years. In another instance a father and all of his sons became blind at twenty-one. Two brothers, their father and paternal grandfather, all became deaf at forty. The authentic cases of a tendency to suicide at about the same time of life in succeeding generations seem little less than fatalistic.

Dr. Gaul relates that the seven children of one man, all possessing a competency and apparent good health, suicided between thirty and forty.

Esquirol cites many cases of insanity that appeared at about the same time of life; one of these, a grandfather, father, and son, all committed suicide; and

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another, that of a family; all of whom became insane at the age of forty.

Inquiry into the antecedents of criminals show that a great majority of them are not alone of their families given to infractions of the law.

Aristotle refers to a man who denied his responsibility for beating his father, "Because," said he, "my father beat his father, and he again beat his, and he also," pointing to his child, "will beat me when he becomes a man, for it runs in our family,"

The life of the individual organism is the recapitulation of its ancestral history, or as Dr. Holmes aptly says, " Each of us is only the footing up of a double column of figures that goes back to the first pair. Every unit tells, some of them are plus, and some minus. If the columns do not add up right, it is commonly because we cannot make out all the figures."

Exceptionally, qualities which, in the parents were negative or not at all apparent, may fortunately or unfortunately predominate in the offspring. This tendency to variation is not, as it would at first appear, incompatible with the laws of heredity, but is rather a necessary part of them. It is a matter of every day observation that the successive offspring of any two parents, under exactly the same environment, differ from each other and from the parents, and even where several are produced at the same birth, as of rabbits, kittens, and puppies—no two are ever found exactly alike. If we go back but three generations, and there are many instances of heredity from more remote ancestry, we have to deal with the representative of eight progenitors, each having, probably, unlike predominant characteristics, and each struggling for supremacy in the

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offspring. Here, in the rearrangement of those tendencies which characterized the father and mother, and their progenitors, and in the environment that stimulates one set of tendencies and allows another to lie dormant, is found the cause for those variations seen in the family and race; the fortunate child of vicious parents possessing the virtue of some more remote ancestor, or the offspring of some really talented person sinking back to mediocrity. The possibilities to be attained where crossing is carried on under favorable circumstances may often be seen in domestic animals. Lord Somerville, speaking of the ability of breeders to produce desirable improvements in animals says, "It would seem they had chalked upon the wall a form perfect in itself and then given it existence." History records a few instances of this class in the human family; the father of Frederick the Great, who was noted for his love of collossal statures, would not allow his guards to marry women of stature inferior to their own, and the result was a generation of imposing men and women. Haller boasted of having belonged to one of these families. There is this important difference between animals produced by artificial selection and the qualities that are the slower growth of natural selection—as soon as there is any relaxation of vigilance on the part of the breeder, we, at once, see a beginning tendency to return to the form of the original stock, while those qualities fixed by natural selection change very slowly, even under considerable changes of environment. Following this rule we see congenital variations which have arisen apparently spontaneously tending to be repeated only in the immediate descendants, and with the introduction of new blood and counter tendencies they gradually disappear. A com-

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monly quoted example is sexti-digitism; Ribot mentions a family each member of which had a supernumerary finger and toe. The anomaly was general for two generations, but rapidly disappeared in the third and fourth, due, of course, to the prepotent tendency to the normal type. That the anomaly might have been preserved had the members possessing it intermarried is shown by a letter quoted by Huxley illustrating this point: "Seth Wright, the proprietor of a farm near Boston, possessed a flock of fifteen ewes and a ram of the ordinary kind. In the year 1791, one of the ewes presented her owner with a male lamb differing, for no assignable reason, from its parents by a disproportionately long body and short bandy legs, whence it was unable to emulate its relatives in foraging in neighboring fields. The neighbors bethought themselves to advise Wright to kill the old patriarch of his fold and install the new ram in his place, that the stay-at-home tendencies enforced by Nature upon the newly arrived ram might be propagated. The result justified their sagacious anticipations, and it was found that when sufficient Ancon sheep were obtained to interbreed with one another the offspring were always pure Ancon.

Experiments in crossing breeds, varieties and species of animals, together with observations on the results of unions of races and marriages of consanguinity, show that there are certain limits on the one hand of similarity, and on the other, of dissimilarity, between which limits only can the union of two animals or individuals be fertile; and in proportion as these limits are approached, the offspring deteriorate in organization. If the two organisms united have the greater part of their development alike, their offspring will inherit their common characteristics

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in an intensified degree; and it follows that if these tendencies are beneficial, the offspring will be more highly developed than either parent, and the reverse is unfortunately true. "Manifest evil," says Darwin, "does not usually follow from pairing the nearest relatives for two, three or even four generations: but all breeders of animals testify, that when imbreeding is carried far enough, an identity of physiological characteristics is reached that is inimical to the perfect development of the offspring, or its development up to the normal standard of the race; and as the similarity of the parents increases, the offspring become more markedly inferior, until finally such a degree is reached that no offspring can be produced."

Among colonies of criminals, where offspring are the results of unions of consanguinity not tolerated in moral communities, degeneration in the mental and physical sphere go hand in hand. Idiocy is common, sterility occurs early, and the extinction of whole families occurs in from four to seven generations. If from the close similarity of characteristics, the specialization is in the direction of mental activity, history teaches conclusively that the ascending movement of the higher faculties will usually be arrested in about the third generation; rarely is it found in the fourth and scarcely an example can be found in the fifth. Whitehead says "The children of parents possessing great intellectual capabilities, are liable to inherit such capabilities in still greater proportion, but, along with this refinement, so to speak, of the cerebral faculties, is usually conjoined a degree of physical delicacy or disproportionate development which constantly endangers organic integrity; and the peril is further in-

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creased if education be urged in early life beyond a certain limit. The mind which seemed able of comprehending intuitively the most abstract problem is soon shaken and unbalanced, merging at length into degeneration and insanity." Progression in one part is attended with retrogression in another, and a general tendency to instability, eventually resulting in degeneration and extinction.

Genius, the highest expression of intellectual activity, is the normal product of two individuals possessing similar high intellectual attainments. It is at once the summum of Nature's energy and the starting point of retrogression.

The danger in marriages of consanguinity is due to the tendency to preponderance of like characteristics which obviously will be great on account of the limitations of the number of ancestors, each parent having two grandparents in common. If two brothers inherit strongly the characteristics of one parent, and in turn transmit to their offspring the same characteristics in a marked degree, the cousins will not only have close blood relationship, but will possess a decided similarity of physiological characteristics: and if they marry, their children will often be imperfect; but on the other hand, if one of the brothers has inherited the tendencies of one parent and the other brother of the other parent, their offspring would, in all probability, have exhibited varying tendencies, and although as closely allied by blood as in the former case, their offspring would be as like to be as well developed as in any case. That a certain minimum degree of dissimilarity must exist between parents, is but another way of stating the foregoing proposition. With further dissimilarity, the tendency is to greater stability of characteristics, and more vigor mentally

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and physically; with still more dissimilarity, the offspring become infertile and exhibit the tendency to revert to some more remote type, and finally a degree of unlikeness is reached where no offspring can be produced. It is a matter of common observation in the human family and among animals as well, that the most favorable results follow the union of those characteristics which differ slightly, but have become fixed under different environment.

Hybrid races usually present attributes intermediate between the two parents, and in the first generation possess a remarkable vigor and stability, but if their children marry, we at once see beginning degeneration. Dr. Dickson cites the case of a colony of mulattoes as an example of what almost invariably occurs. "The pure mulattoes were tall, muscular, well-developed, complete types of physical perfection, many living to extreme old age. Proud of their parentage and light skin they took for wives, women who were also half white. Prosperity and and pride held them aloof from the negroes; their children intermarried and their race continued to the fourth generation, when the families became extinct. The offspring of the first cross were fairly robust, those of the second pale in complexion, inferior in vitality and intelligence, and consequently so in morality. In the third and fourth generation, nearly all the children were girls and notably sterile."

Going a step farther, in this direction there are seen certain results of the crossing of unlike races, or decidedly dissimilar characteristics that are rather interesting then instructive. When two organisms differ enough to be classed as separate species, the offspring of the union is rarely like either parent, and Darwin calls attention to the

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fact that charteristics which have long been lost may reappear. He selected for experiment long-established pure breeds of fowl, in which there was not a trace of red, the original coloring, yet in several of the mongrels this color appeared. In crossing pigeons, the offspring exhibited the coloring of the rock pigeon, from which they must have been separated several hundred generations. The crossing of certain races presents a peculiar prepotence uniformly in one direction. Children of the union of a white woman with a Hottentot have always the good nature and the gentle and kindly disposition of the mother; but the children of white men and Hottentot women have in them all the germs of unruly passion and vice. Livingston says that the children of Portuguese and Negroes are so notoriously bad that an inhabitant once said to him "God made the white man and God made the black man, but the Devil made the half-caste".

Many theories as to the transmission of habits, forms and features peculiar to a family or race have been advanced, and while they are biological problems that do not properly come within the scope of this paper, they are of more than passing interest. The problem has never been solved, and the different theories advanced have each in turn been disproved in the course of time, or succeeded by some modification. The evolutionary theory, or theory of preformation, or syngenesis, was the first, generally accepted; it assumed that the germ cell contained, in a minute form, the whole of the fully developed animal, all the parts the adult will eventually possess exist preformed in the germ, and development consists only in the growth of these parts. Wolff supplanted this with the theory of epigenesis, which is diametrically opposite in its teachings, and assumes that

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no part of the germ cells are preformations of the fully developed animal. Darwin revived the evolutionary theory under the head of pangenesis; it teaches that certain particles of excessively minute size, called by him gemmules are given off from all the cells of the body, these particles collect in the reproductive cells, and hence any change arising in the organism at any time of life, is represented in the reproductive cells. The followers of Darwin have based their assertions of the transmissibility of acquired characteristics on this hypothesis. Changes in the species are attributed to spontaneous variation and natural selection.

At the present time the theory of Prof. Weissman that the germ plasm, the active principle of the germ cell, is transmitted from generation to generation unchanged, is receiving universal favor. Variations in the race and family are attributed by him, to crossing, and changes in the species to natural selection, of which he says "Undeniably, man is as completely subservient to the influence of natural selection as any other animal or plant. Man like every other organism is variable, is bound by the laws of heredity and wages a constant struggle for his existence; therefore, the qualities which aid in that struggle will be retained and improved, while those which are disadvantageous will be lost."

Contrary to the opinion formerly held, and in keeping with the theory that acquired characteristics do not affect the germ cell, Weissman and his followers maintain that they cannot be transmitted. He cut off the tails of mice through a thousand generations without in any instance influencing the growth of that appendage in any generation. Mutilations of various parts practised as custom or mode of

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punishment are not transmitted, in proof of which may be cited the common examples of compression of the feet, as practised among the Chinese ; the forehead, as among certain tribes of Indians, or boring the ears or nasal septum.

Degenerative tendencies of the organism and especially of the nervous system, such as those induced by lead, arsenic and alcohol, are not classed as acquired characteristics. While the degenerative tendencies of themselves are not transmitted, it is abundantly proven that the descendants of alcoholic parents are liable to various neuroses, covering a very wide range, the most common of which are paresis, locomotor ataxia, hysteria, chorea, epilepsy, and such an unstable nervous organization, that shocks, worry, want, or injury readily induce insanity.

Dr. Taguet relates the histories of several families which are in no way unusual, and in which, the parents having been drunkards, the children were either intemperate, or suffered from some form of nervous disease. In the first case, the father was a drunkard ; the mother of sober habits, but the daughter and sister were drunkards. Of five children, the eldest resembles his father. He has three children, the eldest of whom gave birth to a hydrocephalic child. Her sister was of loose habits and her brother an epileptic, drunken imbecile.

The second brother has been twice in an asylum, suffering from acute mania.

The third brother died at twenty-seven of acute tubercular phthisis. The elder daughter married a sober and intelligent man and had six children, of whom one became a drunkard and criminal.

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The younger daughter deserted her husband, afterward leading a loose life.

In the second observation, the father died of cerebral softening, the result of habitual alcoholic excess; the mother of ascites. Their children appeared to escape all heriditary taint. The daughter married a healthy man and had six children. The first is an idiot and born blind. The second and third are of feeble intellect. The fourth was born blind and is of feeble intellect, the fifth is healthy and the sixth born blind.

In the third case, the grandfather was a drunkard and his wife died of specific cirrhosis. Their only son was odd in character and died of alcoholism in an asylum. His son was timid and impressionable and suffered from mania. He had three children, of whom the eldest lived only a few days; the second remains healthy, and the youngest was hydrocephalic and died of convulsions.

Where a neurosis is introduced into the family by the use of alcoholics, the usual advance of the nervous symptoms in successive generations has been thus summarized· In the first generation, depravity and drunkenness; in the second, drunkenness, mania and general paralysis; in the third, hypochondriasis, paranoia and melancholia; and in the fourth, imbecility or idiotism, resulting, probably, in the extinction of the race."

Many of the descendants of an alcoholic parent that have escaped nervous instability have inherited prepotently the characteristics of the healthy parent; others go on to a physiological crisis and break down, while others exhibit their inheritance by migraine, slight neuroses, or premature senile changes.

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To say that insanity, or in fact any of the neuroses or psychoses, are inherited would be a verbal fiction. It is an unstable, nervous organization that is inherited. A small percentage of the descendants of insane parents are so unstable that they inevitably break down at some period of life, more often at adolescence or the stage of involution. No environment could possibly save these persons from their inevitable doom. Accidents or some circumstances of their environment determine the breakdown of the remainder; of these there are two classes, those who have no discoverable hereditary tendency, and those who have inherited an unstable nervous system.

The statistics of insanity vary widely as to the number who have some hereditary tendency. A few authors place the number as low as ten per cent., while others go as high as seventy-five per cent. The former is too low beyond any question, but it is not improbable that insanity or some of its equivalent psychoneurosis, such as decided eccentricity, chorea, hysteria, somnambulism, neurasthenia, migraine, epilepsy, or known diseases of the nervous system, exist in the antecedents of not less than sixty per cent.

Mercier calls special attention to the laws of similarity and dissimilarity, on account of which two persons of apparently perfectly stable nervous organisms produce offspring with unstable and abnormal nervous constitution.

The chances of heredity of the members of the family of an insane person depend upon the laws and examples already cited and upon the form of disease which exists.

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It is said that children are more liable when insanity existed in the mother, as also are those born near the attack of insanity of either parent.

Isolated cases of insanity in a family are not the rule, but when such a case occurs as the result of some special stress, such as long continued mental strain, shock, or acute physical disorder, or the strain incident upon child-bearing, and especially if the disease take the form of mania or melancholia, the children may all escape by reason of the prepotency of the healthy ancestors; on the other hand, the children of parents who suffered from suicidal insanity, the intermittent or periodical insanities, epilepsy or paranoia, are specially liable to inherit an organization easily upset by the accidents and hardships of life.

When the physician is consulted by a person who believes that he has some hereditary tendencies, it is his duty to give the patient the utmost assurance, if necessary, going to the point of dissimulation, "Since even the distant prospect of a dreaded evil may be, so to speak, fatal."

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Hemianopia.

By A. S. M. Chisholm, M. D., Bennington, Vt.

In the following paper I purposely refrain from the intimate consideration of those cases of Hemianopia where this appears as a symptom of hemiplegia or meningitis or embolism of the retinal arteries, and restrict myself to the discussion of the functional form which often prevails even in the midst of structural lesions in the brain. Nettleship, for one, regards every case of Hemianopia as symptomatic in cerebral disease, and refrains from recognition of the functional form. That this is not the case I shall, among other things, endeavor to show.

The name Hemianopia has very properly replaced that of Hemiopia, suggested first by Wollaston, inasmuch as the peculiarity of the condition consists not in the fact that you can see half an object, but in the converse one that there is a half that you cannot see. This invisible area is usually the lateral half of the visual field.

The condition is by no means rare, but its onset is so unexpected, its continuance so brief and its most interesting symptoms so fugacious that the patient fails to note and the physician to discover one of the most suggestive of morbid phenomena, while brief allusions in the text books and scanty notices in the medical journals are all that the most painstaking industry can unearth from the written records.

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A typical case from my note-book may serve as a text for what I shall have to say concerning it. ' Case I. A student while preparing for June examinations often went without his dinner that he might have an extra hour for study. One day he had occasion to get a book from a bookcase, so he arose and walked across the room, but when he looked for his book he found that the left half of the title had disappeared completely as he looked at it. Some confusion of vision had preceded this but he ascribed it to fatigue, and applied himself the more closely to his work. Now, however, he walked back to his seat and experimented with himself. He found that with either eye open the defect still occupied exactly the left lateral half of the visual field. After a few minutes he noticed a flickering like the undulation of heat waves, which began at the vertical border of the obscurity and rapidly extended until the whole blank half of the visual field seemed in rapid motion. No words or objects of any kind appeared through this wavering obscurity. The flickering lines undulated rapidly, tremulous ; some were green and some yellow. All were luminous, and as distinct on closing the eyes as on opening them. On passing through the street the right half only of the shop signs could be seen. The people had only half faces. He continually jostled persons whom he could not see. They were at his left side ; they were invisible. The flickering increased steadily for about half an hour, at no time passing the vertical axis of vision. Then it began rapidly to abate and an intense supra orbital pain supervened. In an hour the visual field was again clear, but objects were confused and accommodation for near objects was difficult and could not be maintained for more than a mo-

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ment or two. During the attack his pulse was slow and regular, and the temperature normal. During a subsequent attack he was examined by Dr. Wadsworth, who reported his retinæ perfectly normal.

In Wollaston's case there were two attacks that he recorded. In the first attack there was left hemianopia, and in the second there was right hemianopia. The symptoms attending these two attacks were like those of the case I have just reported except that the second attack was abruptly terminated "by the excitement produced by the agreeable news of the happy return of a friend engaged in a dangerous enterprise." Four years after the second attack Wollaston died and the necropsy showed that the right Tubercula Quadrigemina had disappeared entirely and were replaced by a neoplasm.

The third case—from my own note book—was that of a young man of marked nervous temperament, a teacher in a public school. In this case the patient persisted in ascribing his symptoms to a dose of Cannabis Indica that he had taken for a headache. Headaches he had often had but never hemianopia. The first thing that had attracted his attention was the disappearance of the upper part of the field of vision, the lower half remaining perfectly distinct so that by directing his vision to a line that would run along the tops of the letters he could continue to read. The rest of the record of this case presents only a repetition of the appearances in Case I, so far as he remarked them.

Of course not all cases of partial amaurosis can be called Hemianopia. Dr. Williams of Boston, however, reports a case under the title Hemianopia where the existence of interretinal fibres might be corroborated if it were not now heresy to speak of them. In Dr. Williams' case the nasal

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side of each retina was paralyzed. In this case near vision should have been normal within the point where the divergence of the eyes in accommodation for distant vision cause the rays to fall upon the insensitive part. This, however, was never for a moment a case of Hemianopia. It was a case of Syphilis which recovered under appropriate specific treatment.

Prof. Förster describes a case of his own where a blot of blindness occurred in the center of the visual field, varying in place from one moment to another while it lasted but always occupying the same part of the field in both eyes.

These cases then represent all the varieties that it is necessary to dwell upon in the elucidation of our theme. Other names, mainly descriptive, have been given to this condition. Prof. Förster of Breslau described it under the name "Amaurosis Partialis Fagax;" Listing called it "Flimmerskotom;" Dr. Hubert Avery named it similarly "Flickering Scotoma." All these cases present the same general appearances of the Case 1, above. The same sudden onset, the same visual phenomena, the same sequelae of nausea, marked physical and mental exhaustion and a hemicrania which lasted twelve to twenty-four hours.

Of course necropsies are not to be obtained upon such cases as are unassociated with organic changes and one must accept with caution conclusions drawn from such cases as have presented these appearances and have terminated fatally. The result of the necropsy in the case of Wollaston showed that the right natis and testis were replaced with a tumor. He had as you remember first left and then right Hemianopia. In a case reported by Dr. E. H. Linnell of left Hemianopia the necropsy showed

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a large firm coagulum in the medullary substance of the right hemisphere surrounded by a thin envelope of softening. The right Tubercula Quadrigemina were also the seat of softening.

Dr. J. Hughlings Jackson also reports a necropsy on a case of left Hemianopia with right Hemiplegia where he found a softened area in the right Optic Thalamus. He regarded it as remarkable that the Hemianopia should occur on the same side as the hemiplegia but it was what he should have expected inasmuch as left hemianopia means insensibility of the right half of the retina.

Why are symmetrical halves of the retinae affected? Pathology of course refers us to the origin and distribution of the fibres of the optic nerves, whose history I shall recapitulate for the purpose of making a subseqnent reflection.

"Since the days of Galen," says Sir Charles Bell, "it has been a disputed point whether there is a union simply of nerves or a decussation. Fishes have the nerve arising from one side of the brain passing to the eye of the other side; they cross but do not unite. Birds have but one optic nerve arising from the brain which splits and forms the right and left optic nerves. Vesalius dissected a young man at Padua who had lost his eye a year before; at the same time he dissected a woman whose eye had been lost a long while. In the latter he found the nerve of that side smaller, firmer and of a reddish color through all its extent. In the young man he observed no effect upon the nerve. He also gives a plate of an instance in which he found the optic nerves pass on to the eyes of the same side from which they take their origin without adhering at all.

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"Valverde, a physician of Spain, who traveled into Italy and studied the works of Vesalius and Human Dissection, says that at Venice he had frequent opportunities of assuring himself that there was no decussation; for robbers were punished for the first offence by losing one of their eyes, and for the second with death. Riolinus, Rolefinkius and Santorini give observations of their having traced the nerves past their union to the same side of the brain with the eye to which they belonged. Vicq d'Azyr, who of all authors I conceive to be the best authority upon such subjects, is decidedly of opinion that there is no decussation. Zin also agrees with the opinion that there is an adhesion and intimate union of substance, but no crossing of the nerves. Soemmerring deems it sufficient to point out the authorities on both sides of the question while he himself expresses no decided opinion upon it."

Sir Charles Bell himself, while evidently admiring Soemmerring's neutrality, arrays himself on the side that he advocates, and pictures the optic commissure as a mere conventionality—a superficial courtesy between the two nerves which meet, salute and pass each on his own way.

On the other hand, towards the close of the last century, Wm. Cheselden, the originator of the operation of lateral lithotomy, wrote, "The two optic nerves, soon after they arise out of the brain, join and seem perfectly united; yet I am not without suspicion of their fibres being preserved distinct, and that the nerve of each eye arises wholly from the opposite side of the brain."

The dictum of Sir Isaac Newton, however, persisted and prevailed in spite of the opinion of such renowned anatomists and surgeons. He had declared his belief in

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the semi decussation of the optic nerves, and after being lost sight of for so many years it was again asserted and sustained such universal credence that it became capable of supporting the theory of purely suppositious intercerebral and interretinal fibres.

The last word has been said for the present by Thomas Dwight with whom all recent authorities, so far as I know, concur. He says, "The question of decussation of the fibres in the chiasma is of some practical interest to the opthalmologist. It was formerly believed that some fibres from each optic tract crossed over to the opposite side while more external ones kept to the original side; also that there are commissures of fibres between the two tracts at the back of the Chiasma and corresponding ones between the retinæ in front of it. This arrangement was expressed by a charmingly symmetrical diagram." "A few years ago Biesiadecki demonstrated as he supposed total decussation, and later other observers came to similar results. The latest and the most convincing observations by Gadden show that in man and in animals that have a common field of vision for both eyes there is a partial decussation, and a complete one for those animals with whom the two eyes have different fields. The anterior commissure between the retinæ has been done away with, and it has been demonstrated that the fibres of the posterior one are separated from the chiasma by a layer of grey matter."

Gordinier, in his work on the "Anatomy of the Central Nervous system," amplifies Dr. Dwight's statement by tracing the optic nerve fibres from the retinæ to the various origin of the nerve roots. In reference to the optic tract he says, "Each optic tract contains the fibres-

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from the nasal half of the retina of the opposite eye and from the temporal half of the retina of the same eye."

And now happens a curious reflection which I simply suggest without taking issue in any way with the eminent anatomists whom I have mentioned from Galen to Gordinier. I have very hastily summarized their theories and dissections, have sketched their position in respect of this matter and have shown their various and divergent beliefs concerning it. The reflection which I timidly make in passing without strenuously advocating any of its consequences, is this :

The temporal portion of the retina is stated by Gray and all authorities to occupy 5-9 of that membrane and includes the macula lutea. As we have seen, the nerve of this area passes into the optic tract of the same side without decussation. But the temporal areas are the only parts of the two retinæ which are capable of being directed towards a single object—the only parts therefore where a common field of vision is possible ; so that it seems as if the fibres which cross at the chiasma cannot assist in binocular vision and anatomists have for centuries discussed a subject of no wider interest than the number of atoms of Hydrogen in the molecule of urea.

To what then is the perception of single objects due? It has been often said that objects would appear double to us if it were not that by the sense of touch we have corrected this impression and have learned to associate the double impression with the existence of a single object. It would seem that the touch is the most reliable of all our senses.

Cheselden reports a case where, to use his own words, " a gentleman who from a blow on the head had one eye

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distorted, found every object appear double but by degrees the most familiar ones became single and in time all objects become so without any amendment of the distortion."

No long argument is required to prove this. A common origin of nerve fibres is not necessarily connected with the solution for the images that fall on the two retinæ are unlike as is proved by alternately considering any object with each eye separately. These two distinct images blend into a third one, a composite one, to which each normal eye contributes its exact share. It is quite immaterial whether the images differ little or widely. That they differ at all proves the perception of single objects an acquired one. The theory of central localization of ideas—for a movement is an idea that the brain imparts, as a perception is an idea that the brain receives—has its limitations and must not be expected to prove too much.

Nor is it only perceptions that are composite. An organized movement as the expression of an idea is due to the concerted action of a group of muscles. Movements of single muscles, twitches of single muscles occur only in disease. The muscles that cooperate to produce a movement as the expression of an idea may be supplied from a single nerve trunk, as the flexor muscles of the forearm, or may be moved by nerves arising from different parts of the brain as in the muscles of respiration. No more perfect or beautiful illustration of this consensus of action in producing a single idea can be observed than in the case of the internal rectus of one eye with the external rectus of the other, for the nerves supplying them arise from different parts of the brain, have no subsequent connection,

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go to dissimilar and non-correspondent parts and yet act in perfect union. It is probable that in birds, who have a distinct field of vision for each eye, this concert between these muscles is not to be observed.

We have then this statement of fact. Corresponding areas of the two retinae have become associated in the perception of single objects. Now it is true as a rule that parts that in health have been associated in function retain this connection during morbid processes, e.g., a whole group of muscles is paralyzed at a time and not any single muscle out of the group. That is to say, the idea that is represented by the group of muscles is obliterated. But perhaps no part of the body can exhibit a more delicate sympathy, founded upon identity of structure and unity of function than the two retinae. I wish I could report to you a case of hemianopia in a cross-eyed patient, but it would unquestionably corroborate the contention that hemianopia does not depend upon the anatomical relations existing between the fibres of corresponding areas of the two retinae, but upon their acquired unity of function. Not otherwise may all these varying cases be explained, i. e., where the obscurity passes over various and unexpected, but always corresponding, areas and is seen in both right and left field of vision consecutively. Indeed the cases of Wollaston under any other explanation would present the anomalous phase of a localized lesion producing antagonistic symptoms, for either right or left hemianopia supervening on the other would change the character of both. Moreover no theory of distribution will adequately account for cases where like the second one cited, an upper or a lower part of the field is obscured.

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We infer then largely that hemianopia exists as a neurosal condition. This statement brings us in touch with a numerous company of diseases and while it is uncertain how long the medical profession may be unable to distinguish between mere derangements of function and microscopical or incipient or temporary alterations of structure, yet it is for the present convenient to consider so-called functional disorders as constituting a class by themselves. They include all cases of mere unstable equilibrium of the nervous system or of its parts.

I spoke above of the danger of regarding hemianopia as a usual symptom of a gross structural lesion and the case of Wollaston cannot on reflection invalidate that statement, for although the autopsy showed a destructive lesion of the corpora quadrigemina, yet the fact that the hemianopia was at first left and afterwards right would indicate a variable origin if it were other than a disorder of function. Moreover the termination of the second attack in a pleasurable excitement is characteristic of neuroses. A burst of tears may cut short a megrim, tickling the fauces or tying a string about the wrist has brought many an epileptic convulsion to a sudden end. Sternutatories were formerly used largely by the profession in similar cases. Indeed there is no need to recapitulate facts that are familiar to you all from almost daily experience.

But the similarity of these cures or terminations to the functional neuroses suggests other points of resemblance between them. Handfield Jones pointed out their great similarity. They are even at times mutually convertible. Epilepsy, migraine, asthma, chorea, pertussis, angina pectoris, exhibit this reciprocal or vicarious action. They are also related on the physiological side with healthy

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processes and on the pathological with morbid processes not usually regarded as functional. For an instance of the last, Trousseau relates a case of migraine replaced by gout and states that the articular and the neuralgic affections often alternate in the same person and that migraine may be the sole manifestation of the diathesis in the offspring of gouty parents. Liveing notices the same convertibility between the same diseases and these observations, multiplied and extended, have given rise to the conjecture that gout and rheumatism are simple neuroses at bottom. On the physiological side we have all seen cases of yawning, sweating and hiccough that have become distinctly morbid and have a right to be regarded as diseases. Anger has always been suspected to be a disease. Outbursts of temper in children often are so violent, so periodical in their recurrence, and of so trifling provocation as to resemble epilepsy or insanity to which indeed in later life they often lead. Grief, fear, surprise have all their pathological aspect. We are familiar with the indescribable cardiac oppression, the contraction of the throat and the convulsive sobbings and the passion of tears of violent grief. "The chest is dilated, the head erect and the breathing free under the influence of hope and courage;" the breath is arrested by surprise and expectation. "The heart's action becomes disordered in the palpitation of fear and expectation, tumultuous in joy and surprise, of increased force and frequency in anger and in grief it fails. There is an aphasia of passion and fear as well as of disease and a suppression of the voice in terror." The blush of modesty and shame is as pathological as the heat and flushing of anger and the collapse

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of terror. They all depend upon a disturbance of the nerve-balance.

It is a well-known fact that the keenest appetite may be dispelled by ill news and this may extend to loathing and even to nausea. Fasting has proved an effectual predisponent to attacks of megrim, epilepsy and angina pectoris and this effect has been too rapidly obtained to be due to lack of nutrition—it must be nervous—while a very little food taken at the time may have an effect far beyond its nutritive value. But strangely enough, while fasting will cause these attacks and taking food will prevent them at times, actual vomiting will relieve them rapidly. A patient remarked once to her physician: "Twenty grains of ipecac never failed to cure me of an attack of asthma within fifteen minutes. The spasm gave way with the first feeling of nausea."

One would certainly expect that of all the acts of life the exercise of the reproductive functions would properly be considered healthy, yet from the time of Hippocrates, who called the act of copulation a "short epilepsy," to Esquirol, who enlarges upon the theme and finds the two almost analogous, its true nature has been suspected. It begins to seem to me very desirable that some one should put the point of a knife between normal and morbid processes so that sanity and insanity may be distinguished and the conclusion may not be logically reached that the only healthy man is like the only good Indian—a dead one.

A few words, in closing, about hemianopia, which I have for a moment neglected to ramble through cognate fields. Right hemianopia is much more troublesome than left, because we read from left to right. The prognosis in

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any case of functional hemianopia is of course good, but its recurrence is probable under the conditions that primarily induced it. Like all neurosal conditions, it usually makes its initial appearance at one of the epochs of life, viz.: that of puberty or the uncertain and anxious period which marks the entrance upon the active duties and responsibilities of life.

From the ophthalmoscope nothing is to be learned, Prof. Förster and Dr. Wadsworth alike report no retinal ischaemia. On the contrary, one of my patients had just taken a dose of Cannabis Indica, which drug produces well marked retinal congestion.

I am confident that this condition is by no means a rare one and I do not doubt that many of our patients who suffer from hemicrania could, if sufficiently observant, tell us amply corroborative tales of its neurosal nature.

October 9, 1900.

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Some of the Evils of Aseptic Surgery.

By J. Sutcliff Hill, M. D., Bellows Falls.

During the past twenty-five years surgery has made the most marked advancement. Before this time the operations that are now daily performed in all civilized countries were never dreamed of. This has been due to the researches of Virchow, and the application of the principles by Lister. All of the principal organs of the body have been operated upon with a success that is truly remarkable. Previous to this period, we were taught with all the gravity of an assured fact that a case was doing well if it was discharging laudable or healthy pus and; we were taught in college the various kinds of pus that infect wounds. All this is now changed and pus at the present time is looked upon, and rightly so, with horror. When we think of the operations that are performed at the present time on the brain, and abdomnial organs, such as the liver, kidneys, bowels, womb and bladder, and also the complete extirpation of the stomach, we are really astounded at our own success. There is, nevertheless, another side to this picture, which has developed such a freedom in operating, that in a measure needs to be analyzed.

When we take into consideration that a student may enter college, take his four years' course, as is done at the present time, locate in some small village and in six

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months or a year from his graduation meet with case after case in which he deems it necessary and will open up the abdominal cavity and perform operations such as I have referred to, there is evidently something wrong. Let me relate a case in point. A friend of mine had a fibroid of the uterus, which had been diagnosed by her family physician. He having a realizing sense of his own weakness, advised her to go to Boston and consult Dr. Baker, a specialist. This she did. He kept her for some time under observation, and finally decided that it was a case in which operation was out of the question, and so advised her. She returned to her home. Visiting at one of the neighbors was a recent graduate, who had served a term in the Woman's Hospital in New York. He was called to see her and advised an operation at once. The family finally consented, and he had barely finished the operation when the patient died. A recent graduate may have mastered during his college course the technique of asepticism so that he fears little dread of infection in the performance of an operation, but we must feel that he lacks that soundness of judgment in diagnosis to decide upon operations of this character, and should have something more in mind, than the mere fact of performing an operation. When we learn and know of men of national reputation who are undecided in their own minds of the need of an operation in many cases, and often make exploratory incisions to confirm or disprove their diagnosis, we cannot help doubting the wisdom of the younger members of the profession resorting to them with so much self-confidence and assurance. I have known of operations having been performed by acknowledged leaders in surgery for what they believed to be fibriods of the uterus, and which proved after ab-

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dominal incision to be pregnancy. It has been stated that an exploratory incision would do no harm. This is another evil of aseptic surgery. When we consider that the best surgeons not only in this country, but other countries as well, have devoted their best energies for years in the prevention of ventral hernia after abdominal incisions, it certainly is no light matter, and may do harm, when these men have this difficulty to contend with in their work. It is a subject of vital importance to us all, as you can scarcely take up a medical journal at the present time without finding some article on the prevention of ventral hernia by some improved method of closure of the abdominal incision. One will advocate suturing the peritoneum, muscle, fascia and skin, while another equally as prominent will advocate the through and through suture of the parietes. After writing this paper I read an article by Henry Parker Newman of Chicago, in which he says: "It may be said without fear of contradiction that we owe to anesthesia, antisepsis and hemostasis not only the immense advance in modern surgery, and its still greater possibilities, but a tendency to loose methods and careless work. This follows so naturally the comparative immunity from danger which surgical patients now enjoy that we need to be constantly on guard against it. With the patient before one on the operating table anesthetized, insensate as the raw material under the hand of the artisan and protected from immediate danger by the safeguards of hemostatics and antisepsis, there is for some too great a temptation to loiter over unessential details, to do showy work or to undertake daring experiments. The least possible violence must be done to delicate structures if we are to approach ideal results. In work within the

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peritoneal cavity, for instance, it is not enough to do an anatomically correct operation for the removal of this or that lesion of the viscera. Too often after such work, we find women suffering as much as before operation." A few years ago operations for appendicitis were so common that all the comment they excited was to wonder at their number. While there is no question of the need of operating on many of these cases, there is a chance to doubt the correctness of the diagnosis in many of the cases that have been subjected to appendectomy. I have seen cases operated upon where nothing of a pathological nature has been found, and the patients have recovered from the operations to carry with them large ventral herniae to tell of the ill advised operations. How many young women have had their ovaries removed without any apparent cause? It is a serious undertaking to unsex the young woman and debar her from performing the duties of a mother. This has been done from the teaching that has gone forth and so freely inculcated into the student's mind that if your technique is all right there is no harm, and after the abdomen has been opened, there is the temptation so keen in the mind of the operator to produce something as a result of his work. There is another phase of the subject. The recent graduate looks forward to the time of being heralded from one town to another as a surgeon, of being called into consultation for the purpose of operating and receiving the expected large fee. He anticipates the time of getting his money in an easier manner, as he supposes, than by the daily visit, such as is performed by the general practitioner. His mind is centered on operating as this will add to his fame and finances. It is looked upon, and I have heard it expressed many times

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that the general practitioner is slow and behind the times, and that he cannot stop to make his living and reputation in that way. This opens up the subject of a specialty. My firm belief is, that no one is qualified to take up special work in any branch of medicine, until he has had a number of years of experience in general practice and from the general practitioner should emerge the specialist. He should know what it is to watch over a case of typhoid fever, to treat a case of pneumonia and to perform other arduous duties that fall to the lot of the general practitioner, as it is only in this way that he can develop that soundness of judgment that is necessary and which will enable him to apply the same to advantage in his special work. "No man is prepared to go into any special field, until he has done general work enough to familiarize himself with disease in all its phases, and neglect of this training is responsible for so many extremists who never temper their thirst for notoriety with common sense. It is this which has caused the loss of many lives and much unnecessary mutilation of the human body. It is this that gives birth to fads and faddists. It is more than probable that the appendix of our fore-fathers occupied a position downward from its cecal attachment until the surgical dictum went forth, "No man is a perfect man so long as he has his appendix." Now you find this troublesome little remains of the "missing link" has left its normal habitat and hidden behind the cecal pouch." Although I heartily approve of the sentiments of Dr. Witherspoon just quoted, do not for one moment think that I condemn operations, such is not my thought, but when I see operations performed that are apparently unnecessary and by persons ill qualified to do such work, I believe that some notice

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should be taken of what is being done by the members of our profession. No one reveres the profession more than I do. I am proud of our success in all the various branches. I honor the men who are silently working in the pathological laboratories; theirs is, in the eyes of the world, a thankless task. I admire the daring and brilliant surgeon who has the mind and the courage to enter unknown fields for the benefit of humanity. What I protest against is the indiscriminate operating, the losing sight as it were of the sacredness of human life.

DISCUSSION.

Dr. E. M. Pond: I will take a few exceptions to what Dr. Hill has said although coinciding with the most of his paper. The subject of appendicitis is one that is being discussed throughout the country and just now in this vicinity. My experience has been that the general practitioner leaves his cases of appendicitis too long. And I think that is the opinion of the best surgeons of to-day. Many, like Morris, say operate at once as soon as the diagnosis is made. Others, like McBurney, say wait until certain conditions develop. Those conditions are rise of temperature and other symptoms. Further qualifications are that a few weeks after the patient is over his first attack he should have an operation. If I may call attention to two weeks of appendicitis practice in my experience, I will say, I operated in seven cases. The first was one in which the diagnosis was obscure. The abdomen was full of pus and that case died. The next was a child of two years and one month. The child had gastric disturbances. This case was obscure. I operated, the temperature went down and the patient made a perfect re-

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covery, and is well now. I saw another case in which operation had been delayed and the patient died. I saw a fourth case in which there was a question of diagnosis. The patient had been sick for a week. The family did not want an operation, but finally consented. It was thought to be a good case for a McBurney incision. It was thought that in all probability we had a catarrhal appendix. I opened into the stinkingest pus I ever saw. The patient died. Out of the seven cases I had within two weeks, three operations have been delayed and the patients died; four operations have been early and all lived.

The paper also speaks regarding operations on pregnant women. A few years ago it was not thought wise for a pregnant woman to have a tooth pulled; it was thought necessary that all manner of operations should be deferred. Often times it is hard to tell whether a woman is pregnant or not. I saw one case where after a diagnosis of pelvic disease we found an operation necessary. The uterus was soft and almost bag-like; we found it pregnant. The right ovary and tube were removed, also the appendix, and the patient went along and had her delivery all right. If an operation is necessary it should be done just the same in pregnancy as at any other time.

Dr. Ira J. Prouty: I have been very much interested in the paper of my friend Dr. Hill. I cannot but feel that he has been a little too severe on the young man who aspires to do surgical work. I believe that a man to do the best operative work must commence when he first starts out in his professional career, for it is not a specialty that can be well mastered in its operative techniqne after middle life. I do not wish to be understood to favor the

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idea that every recent graduate, fresh from the lecture room without any hospital training or special preparation for this work should attempt the use of the scalpel, or that one should commence with hysterectomies or the exploration of the regions of the brain, but commence with minor cases and as he gains in manual dexterity and practical anatomical knowledge to attempt the more severe ones.

The author of the paper rather condemns operations upon the abdomen, especially exploratory ones, because there is danger of post operative hernia. Now we all know that ventral hernia is often the sequence of incisions through the abdominal wall, whether the operator is an amateur or one of the world's famous surgeons. In a clean wound where no drainage has been used, a hernia scarcely ever follows, but it is in the cases of appendicitis where the case has gone until the medical attendant was *sure* there was pus, before a surgeon was called, and where it was necessary to employ drainage for some time. This is a strong argument in favor of the early operation. In a patient who has some obscure abdominal lesion, maybe an appendicitis, an impacted gallbladder or a volvulus, should we not give the sufferer the chance that an exploratory operation offers, rather than allow him to succumb to a sure death because a hernia sometimes follows? I think we will all agree that it is better to have a hernia of the abdominal wall, than not to have any abdominal wall at all.

Dr. J. S. Hill: At the Convention of the American Medical Association in June I heard the subject of appendicitis discussed by some of the leading surgeons of this country, viz.: Keen, Deaver, Murphy and Price. Murphy said, "he made it a point to never operate in a case of

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appendicitis when they called him in at the last moment, for if an operation proved fatal it would be credited up to the account of surgery, and he had decided that if he was not called to operate as quick as the diagnosis was made, he should refuse to operate and let that mortality go to the account of the medical man where it belonged." In a great measure that is true, but I would not go quite as far; however, we all have a right to our opinion. I agree with what Dr. Pond has said, also with Dr. Prouty.

There is a difference between the young man that meets 20 cases and uses his senses to learn of the different symptoms of those cases, and the man who meets 5 cases in the same length of time and does not take the trouble to differentiate them. There is either something in the latitude in which he lives, or in the method of his diagnosis; for you certainly do find these things taking place.

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Vaginal Hysterectomy, with Case Reports.

By C. W. Strobell, M. D., Rutland, Vt.

Practically, the operation of vaginal hysterectomy is more difficult of performance, than its progenitor, which enters the abdomen along the linea alba.

For this reason alone, the operation would long since have been relegated to the limbo of surgical fads,—it being natural for the workers to seek simplicity of technique.

In this instance, however, it has been demonstrated that the more difficult, is also the better way, in appropriate cases.

Vaginal hysterectomy has been on *trial* for a sufficient length of time. In its early career it encountered violent opposition in many gynaecological strongholds, chief among the objections being, the alleged impracticability of rendering the birth-canal sufficiently sterile. This delusion has received its quietus. It was said that the "danger of hemorrhage vastly outpointed the increased drainage facilities;" we now know that hemorrhage is rare, when the operation is properly performed. The necessity of "working in the dark" on account of narrowness of space—really the most formidable objection of all —was enlarged upon, and with good reason, but recent dis-

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coveries and additions to the technique have brushed aside this objection. The danger of pelvic hernia was insisted upon by others, but it has been found of very rare occurrence. It was said that "injury to the intestine could scarcely be avoided," but combined lithotomy, a Trendelenburg posture, and a gauze pad placed between the field of operation and the intestine, affords not only perfect immunity from injury, but light as well.

Thus on all points the opponents of this method have been defeated.

Neither could they resist the logic of results. Surgical shock and nausea usually so prominent in supra-pubic cœliotomy were noted to be markedly lessened when the lower route was taken. Not alone was there no breach of the abdominal wall, necessitating the use of a supporter, for varying periods, but the predicted breach in the vaginal cacatrix failed to occur. Also intestinal obstruction, following vaginal hysterectomy, was found to be of exceedingly rare occurrence except when clamps, gauze drains and dams were used, which invite intestinal traumatism and sepsis.

Again, in vaginal hysterectomy, no mass ligatures were left permanently buried to occasion complicating sequelæ, as in the ventral operation.

Another valuable point: It is conceded by most authorities that the cause of intestinal paralysis after abdominal operations is "handling of the intestines, their exposure to dry air, and thermal changes. In the vaginal operation, properly performed, this does not occur, or, only in a very limited degree. The intestines are not touched or handled, indeed scarcely seen, and there is, hence, the minimum of disturbance of the relations exist-

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ing between different parts of the intestines, and the various mesenteric folds, thus minimizing danger of trauma, with its resultant outpour of inflammatory exudates.

Vaginal hysterectomy has its limits, which bounds should not, recklessly, be exceeded. Degenerated uterine masses reaching above the umbilicus should be attacked from above, or, by a combination of methods.

Malignant disease, involving the parametrium, urinary bladder or walls of the rectum should be left severely alone, or, attacked from above through a liberal opening, and by a painstaking dissection of involved lymphatic chains, as outlined by Deaver and others. Also, cysts, firmly embraced in the folds of the broad ligaments, would better be removed by the ventral incision. But conditions less serious, can be operated per vaginam.

Vaginal hysterectomy is performed by one of three recognized methods, or slight modifications of them, *i. e.* American, German, and French. Of these the German method,—inaugurated and perfected by Czerny, Bilroth, and Schroder—has for its distinctive feature, the serial ligation of the broad ligaments, draws the stumps by their attached ligature ends into the vaginal incision, and sutures the peritoneum, including the stumps, in such a manner as to leave these extra peritoneally, pending sloughing.

This method is more difficult, technically, than the clamp method.

The most surgical, and, taking middle ground, as regards ease of performance is the American or "Pratt" method, which undertakes to eneucliate the uterus, in various ways, by gradual dissection, placing ligatures only at bleeding points, as they appear, sometimes completing the operation without placing a single ligature, by use of

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galvano-cautery, angiotribe or the new electro-hæmostatic forceps of Downe's; in other instances relying upon careful blunt dissection and torsion wholly; and, finally, after any, or all, of these variations, in clean cases, closing the rent in the peritoneum and vaginal vault with continuous suture.

The French or clamp method, accredited to Pean, and, Richelot, applies from two to six hæmostatic hysterectomy clamps to the broad ligaments, these being left in situ, after the operation, until the danger of hemorrhage is past—usually forty-eight to fifty hours—when they are removed. Unquestionably the clamp method is the most universally applicable, and safest in the hands of the majority of operators, as regards the immediate technique, but it is also the most unsurgical, as has been indicated in the foregoing.

In all these methods, the most important anatomical structure to avoid is the ureter, which, if wounded, or, occluded, vastly complicates the operation, and menaces, most seriously, the life of the patient. To obviate this, ureteral sounds are sometimes passed, and, left in situ, during the operation, to act as guides; but, ordinarily, this is not considered necessary, and, obviously, adds the danger of infection of the genito-urinary tract.

Accidental section, partial or complete, of a ureter, indicates implantation into the bladder, vagina, or rectum, or the immediate removal of the kidney. Accidental occlusion of the ureter is also an indication for nephrectomy, if, fortunately the condition is recognized in season.

In conclusion, a point of extremely practical importance is the view the patient takes of the proposed cœliotomy. We all know how very difficult it is for the patient

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to accept operation when she is informed that she must be "opened," meaning of course the ventral incision. It is a terrible thought to her. But tell her that the work will be done from *below*, and it is not at all the same thing, it immediately becomes a simple matter, on a plane with perineorrhaphy or trachelorraphy, and the like.

In connection with this paper, I have two typical cases to report, illustrative of the operation, its difficulties, dangers, possible complications, and results: one, in a nullipara, being a carcinomatous uterus in the earliest recognizable stage, involving the fundus, and almost entirely devoid of appreciable enlargement—or glandular infiltration; with contracted broad-ligaments and vaginal canal. The other, a border line fibromatous uterus, in a multipara, reaching slightly above the umbilicus and containing within its walls six tumors, varying in size from an English walnut to a hen's egg.

Case No. 1.

Mrs. K. M.; aged 48 yrs.; married; never pregnant. Dysmenorrhœa during entire menstrual life. Leucorrhœa for years. Pelvic troubles constantly since marriage. Climacteric begun four years ago. Family history shows the father to have died of pulmonary tuberculosis, while the mother is still in good health at 80. Symptoms: Cancerous cachexia; sacral neuralgia; iliac streak; and, a sanious or thin bloody uterine discharge, almost continuously, for the past year. Examination shows vaginal canal contracted; urethra and rectum normal; cervix hard and small; uterus retroverted, adherent; fundus somewhat enlarged, but hard, and sensitive to bimanual examination.

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Diagnosis of incipient carcinoma was made, and immediate operation advised.

After manual divulsion of the vaginal canal, and, sphincter ani, followed by curettage, total vaginal hysterectomy was done. Dense old adhesions bound the fundus firmly down in the sacral hollow. When I began the operation, it was with the idea of eneucleating, but the surgeon truly never knows what he may be obliged to do ere the close of the operation. Contraction of the broad ligaments had so drawn upon these structures, as to make it, in the last degree, difficult to drag down the organ and adnexa, within reach. Hemisection was therefore done, then closing the operation with clamps, with which I was enabled to reach more of the possibly infected tissue, and with much less risk of subsequent hemorrhage. The lithotomy position combined with moderate Trendelenburg was maintained throughout the operation.

The intestine did not in the least occlude the peritoneal opening; no ligature was placed; the pelvic space lightly packed with gauze, and the clamps carefully hedged about with the same material, to guard against injury from pressure.

The subsequent history was not alone, "uneventful," but "beautiful to contemplate," as well if I may so express it. Scarcely any pain; only slight nausea for about eighteen hours after which the stomach tolerated nutrient fluids. The distressing thirst so prominent in abdominal work was almost absent. Scarcely any evidence of surgcal shock, and by the evening of the day following that of the operation, it would have been difficult for a casual observer to believe that the patient had recently undergone so serious an operation. Eyes bright, smiling, laughing, and even

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wanting to know how soon she might "go home." And she could easily have gone by the end of the first week but, for politic reasons I thought best to keep her confined for three weeks, simply for the good the *rest* would do her.

The hysterectomy clamps were removed at the end of forty-eight hours. Free oozing occurred, somewhat alarming, and fearing trouble preparations were made for search upon the operating table, but, by the time all was in readiness to proceed the flow ceased. The gauze packing or drain was removed, bit by bit daily, until, by the fifth day the last was taken. Bichloride vaginal irrigations were instituted on the third day, and these always followed with sterile water. The patient was dismissed at the end of the third week. Seen four months later she seemed to be perfectly well and in the best of spirits.

Case No. 2.

Mrs. D.; white; American; aged 48; multipara; ancestors free from malignant affections. Gives history of very frequent and exhaustive hemorrhages, evidence of which is quite apparent in the anæmic, emaciated and generally debilitated aspect.

Upon physical examination in dorsal decubitus the lower segment of the abdomen was seen to protrude, as in the fifth month of gestation. Superiorly and laterally the abdominal walls form slightly sloping pouches.

The superior boundary of this protuberance is marked by the umbilicus. Upon palpation a firm dense body is felt, slightly nodular yet, roughly symmetrical, somewhat elastic in the intervals between nodules, the mass being quite movable and free from tenderness.

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Percussion yields absolute flatness. Examination shows a very badly damaged perineum; relaxed vaginal walls and a deep cervical tear extending into the left parametrium. Bimanually, palpation proved the mass to be the nodular uterus, with motion limited in all directions by its augmented bulk.

The urinary bladder was found to be the seat of chronic inflammation. No marked enlargement of the pelvic lymphatic glands could be detected. The adnexa could not be satisfactorily palpated. Depth of uterine cavity was seven inches. Motion of probe within cavity was extremely limited, its presence provoking hemorrhage.

Diagnosis of interstitial uterine fibroids was made, while the hemorrhages furnished an imperative indication for operation.

Considering the age of the patient, preservation of any portion of the uterus, or adnexa was not considered. Of routes, the choice fell upon the vaginal as being, in her case, the safest, all things considered, and mainly, because the author had a premonition amounting to a certainty, that, in this case, the supra pubic operation would prove fatal; as happened to him in a strikingly similar case, some two or three years ago. This decision was reached with due appreciation of the difficulties to be encountered in this typical border-line case for vaginal hysterectomy, as no operator advocates removal of solid growths per vaginam, when the northern border reaches beyond the umbilicus.

After absolute rest in bed for one week, total vaginal hysterectomy was done, and, necessarily, by the clamp method. Beginning, the hand was first gradually forced into the vaginal tract then alternately clenched and relaxed,

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in all positions, until the canal was thoroughly patulous, being careful however, by taking time, to avoid traumatism. The sphincter ani was then divulsed. Next the uterus rapidly curetted and packed with gauze. Grasping both lips of the cervix with traction forceps the cervix was next encircled with the scalpel, about a half inch above the plane of the os, and Doyen's half inch lateral incisions made. The bladder was, with very great difficulty, peeled from the anterior wall of the uterus, but not wholly without mishap, as a transverse tear occurred despite the utmost precaution, due, probably, to the attenuated, or, friable condition, combined with the difficulty of making effective traction upon a mass too large to pass through the inferior strait of the pelvis.

As soon as the anterior peritoneal pouch was entered, the beak of a broad vaginal retractor was introduced under the pubic arch and into the peritoneal cavity, in a manner to hold the bladder well up out of harm's way.

The post peritoneal pouch proved less difficult of access. Capillary oozing was somewhat free.

Eneucleation was proceeded with until the uterine arteries could be plainly felt in the bases of the broad ligaments. Hysterectomy clamps were then placed snugly against the uterus including in their grasp the lower segments of the broad ligaments thereby securing the uterine arteries. Section of the tissue between the forceps and the uterus up to the ends of the beaks, was next done. At this point it became absolutely impossible to drag the uterus down any farther.

Passing, now, one blade of two traction forceps into the cervix on each side and locking them, under lateral traction, the cervix was bisected, and the anterier wall of the uterus

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divided upward and outward, on each side in the direction of either ilia, thus forming a wedge, the base being at the fundus, the apex pointing donwward into the vagina.

Morcellation was now employed. Strong traction forceps brought the tissues within reach, in hand-over-hand fashion, always fixing one well above the other before the lower morsel was excised.

When one-half the wedge-shaped piece had been removed, a fibroid the size of a hen's egg was encountered. This resisted evulsion and was removed in sections.

The next fibroid was grasped and twisted out of its bed. At the fundus a small subperitoneal tumor was removed. Sufficient space having now been gained, a second pair of clamps were placed above the first, on either side, and again the intervening tissue was divided. Soon the fundus was anteverted and dragged down sufficiently to permit completion of bisection of the posterior uterine wall. One half of tne divided uterus was then thrust back into the pelvis, while the otherwas drawn down, bringing the adnexa into view, and within reach of the third set of clamps which were applied from above downward, and the section completed. The remaining half was similarly treated.

Hemorrhage was practically nil. A few silk interrupted sutures united the edges of the rent in the bladder, a retention catheter placed and the patient put to bed. The operation consumed ninety minutes. The tumor mass with its six fibroids weighed four pounds.

Shock was somewhat severe, but the patient rallied well. Nausea was quite troublesome for about four days, brown vomit appearing and the stomach rejecting everything.

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Considerable pain until clamps were removed which was at the end of fifty hours. Bowels acted quite freely by the end of the third day, when all the symptoms were ameliorated.

Convalescence was retarded considerably by the bladder complication. Patient, however, made a good recovery. Two months later she reported herself well, except for some irritation about the bladder, and slight leakage of urine per vaginam, if the bladder was allowed to become greatly distended. This condition may require further operative interference.

That this case would have died had the shock been more severe—as would have been the case had the ventral operation been done, I have not the slightest doubt.

DISCUSSION.

Dr. Ira J. Prouty:—The cases reported so interestingly by Dr. Strobell need no discussion or criticism. Operators differ as to the advisability of doing a hysterectomy by the vaginal route, yet there are some cases, especially in fat women, where thick abdominal walls form an almost insurmountable obstacle to a complete operation from above. It is in cases of cancer that the vaginal method is adopted and to my mind there are grave objections to its use in any case. The uterus and a very small portion of the adjacent broad ligament can be removed and hence in many cases carcinomatous tissue is very often left behind, which by the upper route could have been completely eneucleated. Pean of Paris was one of the strongest advocates of the vaginal route and McMurtry is one of his satellites evidently for in the International Text Book

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of Surgery he says " vaginal hysterectomy is in every way preferable to the abdominal." Landau of Berlin was a pupil of Pean and follows his teachings, and like him uses the clamp method. Olshausen, also of Berlin, ties with silk and cuts the ligatures as he goes, using no clamps at all. I watched these two operators for several weeks and while they are both skillful surgeons, Olshausen's method is to me by far the more scientific and if one has his specially constructed needle, which is shaped like the letter S, there can be no trouble in using the ligature. In talking with Kelly a year ago he said that he had given up some time ago the vaginal method as he did not consider the abdominal any more dangerous than the other. As I have already said, I use the lower operation only in the case of very fat women where it is almost impossible to make a clean dissection from above.

Dr. E. M. Pond :—On the subject of vaginal and abdominal hysterectomy there are as many surgeons in favor of one as of the other. Personally, I like the abdominal route. In a vaginal operation you are constantly working in the dark and there is danger of a complication such as an incision of the intestines or the ureters. Personally I am an advocate of the abdominal route, and always use it as far as possible.

Dr. C. W. Strobell :—Of course I am not advocating either method exclusively in this paper. I try to travel the middle road in everything I do in life, especially in surgery. I try to have my judgment lead me to do what is best. The ventral method is certainly much easier. The worry is much less than in the other,— but which is safer for the patient,—that is the question. The shock which follows ventral section is greater,—much more so,

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than by the vaginal method. Take a cancerous uterus in the incipient stage, and it seems to me it is just as easy to operate from below ; the patient gets well much easier, and it does away with the danger of ventral hernia. It seems better in every way. Dr. Pond in his remarks said, " there was danger of incision of the intestines." I cannot imagine how that could occur ; no knife would go above the plane of the os. The cutting is done low; everything is pulled down within full view, and no cutting should be done unless it is right in this little aperature where you are working, and within this field of vision.

With regard to patients—many patients, we all know, keep putting off operations until it is too late, because they are thinking of what a terrible thing it is to be " opened." When you propose to do the work from below, they don't think much about it. It is easier to get consent to operate, and it is equally safe. I think it is best to advise that way.

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Abdominal Palpation in Obstetrics.

By Dr. Frederick E. Clark, Burlington, Vt.

I have chosen this division of obstetrical examination as I believe it is the one most often neglected altogether, or if made, is so superficially and rudely conducted, that it gives but little information of existing conditions. On the other hand if it is performed with proper caution, exactness, and a strict observance of a certain order in the examination, it can only result in much good. In fact I would place it as *the* most important division of an obstetrical examination. By it the greatest amount of information of considerable value is afforded with the least possible danger and inconvenience to the patient. I must add however that it is only by constant and untiring practice that the requisite skill and precision can be acquired.

An obstetrical examination naturally divides itself into three main divisions.

First:—Is the Oral examination which gives us information of previous pregnancies or labors; their character, duration and complication. The history of the present pregnancy together with the name, age, family history and such other information as we desire to obtain at this time.

Second:—Is the *External Examination*, accomplished by means of inspection, auscultation and palpation.

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Third:—Is the *Internal* or *Vaginal* examination.

It will be observed that our subject for consideration is a part of the second division or external examination. As it is so closely allied to inspection I shall call your attention to that part of the examination on the manikin.

A few general rules that apply to all obstetrical examinations are to be observed in this division.

1. The bladder and rectum must be emptied.

2. Ascertain at the first examination whatever is necessary to be known.

3. A certain order in the examination should always be followed, so that nothing may be omitted or forgotten.

4. Modesty is always to be protected as much as possible. No unnecessary exposure should be made and the examining physician should observe silence as to the result of the examination.

5. Train the left hand as well as the right, to make examinations.

6. The hands of the obstetrician should always be soft, warm, and in these days of antiseptics, I need not accentuate the necessity of their being clean, that is, in an aseptic condition.

The object of abdominal palpation is to recognize the size, shape, and consistency of the uterine tumor, to distinguish it from other intro-abdominal growths; to ascertain in advanced pregnancy the position and presentation of the foetus. In a very large number of cases palpation alone serves to establish the existence of pregnancy, for by it we are enabled to obtain three of the most positive signs, which are ballottement, quickening and intermittent contraction of the uterus.

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Certain conditions must be present before this method of exploration becomes available.

1. The fundus uteri must have risen above the symphysis pubis which occurs usually after the third month of pregnancy.

2. There must not be a super-abundance of fat in the abdominal wall.

3. There should be only a normal quantity of amniotic fluid. Any great excess would defeat the objects of the examination.

4. There must be complete relaxation or nearly so of the abdominal walls as well as of the uterine muscle.

5. The manipulation must be made in advanced pregnancy, during the interval of uterine contraction, and at full time during the periods of rest between the pains. The examination is always to be made with the woman in a reclining position. The examining-bed should be simple, with a hard mattress, and conveniently approached from all sides. The patient should be directed to flex the legs slightly on the abdomen with knees well separated and the heels together. The dress should be loosened and drawn downwards and the shirt upwards. As I stated before, palpation is preceded by inspection. The presence of a pointed or pendulous belly would lead us to suspect that we had a contracted pelvis, especially so if in a primipara with a marked broadening and figure-of-eight shape of the uterus. The transverse position, or marked lateral obliquities of the uterus are often very noticeable in many cases and can be determined by inspection alone.

After inspecting the abdomen it should be covered by a thin sheet. Then we proceed to palpate the abdomen

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by following the four well tested manipulations and in the order given. In all four of these manipulations both hands are employed at the same time, and the entire surface of the palm is utilized. Should it be necessary to exert a uniform, gentle but rather strong pressure upon the abdomen, the fingers should be held together ; but if only a light pressure is necessary and we wish to grasp individual parts, the fingers are separated as far as possible.

The first three manipulations are made while the examiner is seated at the side of the patient to be examined and facing her head. If more convenient for the examiner he may stand up, but he should face the woman's head in either case.

First manipulation.

The hands approach each other at the finger tips, then the palms of the hands are laid across the abdomen of the woman. After that they are made to slide gently and uniformly upward over the entire pregnant uterus as far as the fundus, at the same time defining its position in relation to the navel and ensiform cartilage.

What does this first manipulation determine? It determines whether the longitudinal axis of the foetus is coincident with that of the uterus, or if it occupies the transverse diameter of that organ, or assumes a position intermediate between. The first is normal ; the latter are abnormal. It also determines whether the head or breech lies in the fundus, the size of the child, and how far the pregnancy has advanced.

Second manipulation.

Both hands, which are now extended, are moved from the ensiform cartilage to the sides of the abdomen and are laid flat one on each side of the uterus. One hand will feel

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a long, large cylinder which gives a firm, broad, even resistance, and this corresponds to the back of the foetus. To confirm this fact, the small parts or extremities are felt for by a rubbing motion with the other outstretched hand on the opposite side. They are felt as irregular bodies, slipping away from the hand, and changing their position from time to time.

If in this manipulation one finds much difficulty in locating the back of the foetus, it can be greatly facilitated by placing one hand flat on the median line of the abdomen and pressing the uterus gently backwards. By this manouver the liquor amnii is forced to one side, and the child's back towards the other, nearer to the abdominal walls, where it can then be felt very easily with the other hand.

Having located the back and the extremities, the portion of the foetal ellipse presenting at the superior strait is next ascertained.

Third manipulation.

The right or left hand, with outstretched fingers, seize the presenting part of the child just above the pelvic inlet, between the thumb and the tip of the middle finger. In order to seize a head that has already engaged in the pelvic inlet in primipara, it should be sought in the direction of the pelvic cavity with the tips of the thumb and middle finger. In multipara the hand and finger tips are held more horizontally in order to seize the head which now stands higher in the uterus as it does not engage in the pelvic inlet until labor actually begins. This manipulation is greatly facilitated in multipara by pressing against the presenting part, by placing the other hand on the fundus of the uterus. If the presenting part is hard and round, it is

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the head, and it can be moved about easily. The breech is much softer and more uneven. The breech very rarely if ever engages in the superior strait until labor has actually begun.

If the presenting head or breech is felt to be uncommonly reversed, indistinct, and softer than usual, the suspicion is justified that the placenta lies in the lower uterine segment. (Spencer). (Leopold).

If no presenting part can be detected at the superior strait the head should be sought for in the sides of the uterus.

This third manipulation is of great value in all cases where the presenting part, head or breech, remain either in or above the pelvic inlet. If, however, as often occurs in primapara during the last few weeks of pregnancy or in the course of labor, the presenting part is found already in the cavity or outlet of the pelvis, the fourth manipulation is of importance.

Fourth manipulation.

For this manipulation the examiners stands at the side and facing the feet of the woman with his back towards her face. The patient is directed to take long full inspirations following with a long expiration with the mouth open. This will relax the abdomen much more completely. The finger tips of both hands now enter slowly and gently from above along the sides of the pelvis into its cavity. Then, if the head is low, one will feel that hard round part of the child occupying the pelvis, with the more prominent forehead on one side from the less prominent nape of the neck on the opposite side.

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These four manipulations may be combined in many ways with great advantage, to meet the demand in special cases.

My plea this afternoon is for a more careful and pains-taking external examination. All internal examinations should be avoided as long as the external examination of the mother and child reveals a normal condition and labor proceeding naturally. The mere presence of pain at the beginning of labor does not demand an internal examination if labor is progressing properly. In fact any unnecessary vaginal examination cannot be too strongly condemned. I believe it is almost criminal to try to assist in the early stage of dilatation by attempting to stretch the cervix with the finger. The bag of water which should always be carefully preserved if liable to be prematurely ruptured. It not only subjects the woman to infection, but also stimulates too strong pain during the first stage, which should always be forbidden, for if the os is not completely dilated the lower uterine segment is forced down into the small pelvis and the walls of the uterus at that point incarcerated between the head and bony pelvis, thus causing swelling and inflammation of the margins of the os and increasing the possibilities of an extensive cervical laceration if not a uterine rupture. I trust there is no physician here this afternoon who will deceive himself by persuading his patients and their friends that he can safely and properly hasten the progress of labor by making frequent vaginal examinations, working about the cervix, stretching and lubricating it, and finally rupturing the bag of water in order to increase or excite uterine contraction.

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I would not have you think that I would discard the vaginal examination altogether, for it has its important place, but I do believe that it is too often resorted to when an external exploration would give all the information obtained by the internal examination, together with a great deal more and not subject our patient to the possibilities of infection.

A FEW GENERAL PRECAUTIONS.

1. The hands of the obstetrician are his most valuable instruments. Let him see to it that he places the highest value upon their careful attention.

2. That infection is almost invariably transmitted by the examining finger, but it may be occasioned by unclean instruments, bedding, clothing and the like.

3. Pregnant, parturient, and puerperal women, can be very speedily infected by a single vaginal examination.

4. Infectious material is found everywhere, and in *no* internal examination is the danger of infection absent. None of us should be over-confident, but on the other hand always conforming to the minutest detail of antisepsis.

5. Internal examination should be as infrequent as possible during pregnancy and labor. Resorting to it only where external examination does not afford sufficient information.

6. External examination should be performed as often as possible in order to watch the progress of labor and to correct by external manipulation or version any abnormal position or presentation, thereby making delivery possible and insuring to your patient the least amount of suffering and exhaustion.

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I have purposely omitted in this paper, the finer points of diagnosis and differential diagnosis, that I might bring out some regular system or method to be followed in making an external examination and to accentuate its value and great advantage over the too frequently and I might say in many cases, the only, examination made per vaginam.

DISCUSSION.

Dr. C. W. Peck—I am very much interested in this paper. I have practiced medicine for over 30 years and this is the first article on this subject I have ever heard. I have heard it talked of and I have read about it, but never before have I heard any reasonable explanation or any demonstration that would convince me that it could be done. I haven't been a believer in this method. I don't doubt but there is a great deal in it, but of course I have got to learn my profession over if I adopt this system. I will try the next case of obstetrics I have, and see what success I have in making a diagnosis. If it is necessary that the patient have thin abdominal walls, then it is only practical in a certain number of cases. I want to agree with Dr. Clark thoroughly, with regard to frequent digital examinations in cases of labor ; but I don't want to exclude them altogether. He said it was almost criminal to make an examination when you arrive, in a case of labor,—that is as I understood him. If that is true then I have committed crime a great many times. I believe in the aseptic methods of surgery, and I think this is a surgical operation, to some extent. When I am called to a case in labor I make my hands as clean as possible and then I make a digital examination,—and I don't know how you are going to settle the question

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as to whether the woman is in labor or not without a digital examination. There is one thing certain, after she has been in labor some time you will see unmistakable evidence at the neck of the uterus. I don't know any other way you can tell if your patient is really in labor than by such an examination,—by that examination I always *know*. By it I can save hours of unnecessary effort at an attempt at labor. There are a great many women who do not know when they are in real labor. I knew of a case where a woman with her fourteenth child did not know; she was two weeks ahead of time. She thought she was in labor, but she wasn't. She had false labor pains, and such cases are not infrequent. I always examine my patient at once, after putting my hands in proper condition, and settle the question of whether or not she is in labor. If she is not, and has been worrying for some time and is worn and tired, I give her a Dover's powder or some opiate and tell her to go to sleep. She awakes rested and ready to begin business. I don't know any other reasonable way to do.

One other thing—the turning of a child in the uterus. When I have a face presentation or a breech presentation and want a normal, I never have turned a baby except in placenta previa, but somehow or other I get through with my obstetric practice and the mother and baby come out all right. I cannot understand how, when you have a child lying crosswise in utero, you can turn it by manipulation. I have had doctors tell me they could convert a face presentation into a normal one, but I don't understand how. I have had cases where I have waited for 24 hours and the os would not dilate; it was thick and unyielding; I have tried to stretch it and have worked 12 hours at a time to stretch it sufficiently to get a pair of forceps into the uterus to assist nature,—

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these cases are many times face presentations. It is the object of obstetric practice to assist, and if you can get the mouth of the womb open enough to get your forceps in the uterus, and if you are a clever manipulator, you can get out of it all right. When you can get the mouth of the uterus open enough to proceed you will feel mighty happy, if you have had cases similar to mine, and felt as I have. I am not too old to learn, and once more I want to say I am greatly interested in this paper of Dr. Clark's and thank him for it.

Dr. C. S. Scofield :—It is surprising to note how a person can be educated to determine, by external palpation alone, the position of the child or children, whether it is a twin or a single birth. It is astonishing how the mid-wives in the hospitals in London can tell the position of the child from external examination. I have in mind a case where the mid-wife said, after external palpation that there was to be a twin birth, which proved true. They think there if you are unable to determine the position of the child by external palpation, you had better remain in the hospital a little while longer before receiving a certificate. Dr. Griffith says: "A person must not be discouraged if the diagnosis is not *always* correct," and cites a case where he with others of many years' experience were unable to diagnose positively a case of twin pregnancy, although it was suspected. It proved to be a case where one foetus was directly posterior to the other.

By Dr. W. H. Vincent :—I wonder how many physicians there are here who make a positive diagnosis of the position of the child in every case. I am one of those who are not able to do it. If I am satisfied that I have a head presentation, and have not got a face presentation, I don't spend very much time in fussing around to find the location

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of the head. I expect to get along some way if it does not work into a face presentation or something of that kind. In regard to vaginal examinations, I am positive that I have assisted women in getting along in their cases, and haven't done any harm, to my knowledge, by frequent vaginal examinations. I have never had any septicæmia and have lost but one woman in confinement in 14 years. I know positively that I have been a great help in cases by dilating the neck of the uterus after the pains got severe, and have assisted the woman in that way. Women have told me of my assistance in their cases. I have in fact assisted them for two or three hours at a time by dilating the neck of the uterus with the finger. I have heard older members of the profession say that they believed in letting nature take its course, and I have known physicians in a town where I have been located to stay two or three days with a woman, and I have made up my mind in a case where with ordinary pains a woman was not delivered in 12 hours, to aid her and with the use of forceps to deliver the child. We are responsible for that woman and I believe we should assist her by dilating the uterus. I have been with a woman over 12 hours with real labor pains, in my 14 years of practice and an average of 30 cases a year. There have been a few cases where I have made the abdominal examination but I have never relied upon it.

Dr. C. W. Peck :—Why not stretch the os when it will not dilate? If it will not dilate find out why. Have you used chloroform?

By Dr. C. W. Strobell :—I hope this method of determining the position of the child will become very general in use for the reason that we ought to keep our fingers out of the vagina. Infection comes from without,—no, not al-

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ways, there are pyosalpinx cases, where during labor a little of the pus may be forced out of the purulent tube and infects the uterus in that way. But in the general run of cases the infection comes from without and we introduce it by means of our fingers. A normal labor is aseptic from within and if we do not introduce infection from without there will be no puerperal fever. In each case prepare sterilized towels by wrapping up a dozen in another towel, then putting the bundle into an oven to roast for a quarter or half an hour until the outside covering is brown, then you have a bundle of baked towels. Then proceed to sterilize the woman's external parts, just as you would for a surgical operation. Use soap and water first, then bicloride solutions, then alcohol ; then place the sterilized towels with your own sterile hands. Now make a vaginal examination. I think one at least should be made to determine the presentation, or corroborate the other examination, if you please. Every practitioner should have a pair of sterilized rubber gloves for this work. A man who is having 30 obstetric cases in a year will be amply repaid as they only cost $1, and with care will last some time. By taking these precautions you can make your examination, and the woman will be entirely safe from infection.

Dr. H. L. Newell :—I have been very much interested in and instructed by this paper. I don't think the importance of external examination can be emphasized too much ; at the same time I cannot understand why we should hesitate to make vaginal examinations, when necessary, if we prepare our hands properly, as in a surgical operation. We do not hesitate to put our hands into abdominal incisions if the hands are properly sterilized. I think the danger does not come from the hands, if we

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are careful in sterilizing them as we ought to. The danger comes from introducing some of the vaginal or labial secretions into the uterus. We not only should prepare our hands, but we ought also to render the vaginal canal as well as the entire vulva as aseptic as possible. It seems to me this is a point of very great importance. If we do this in a thorough manner then we need not hesitate to make a propef examination. I concur with Dr. Vincent in the fact that we can, and we often do, render great assistance to our patients, as he states. They often tell us so; they say that they had doctor so and so, at a previous confinement, and after he came in and looked at them he went down stairs and smoked his cigar and read the paper, and did not come near them for several hours. (The patient being too indignant at such neglect or indifference to ask for help). They want someone who will take hold and help them, and to encourage them, and enthuse strength and courage into them when they are having their pains, by staying near them and telling them how well they are doing, how brave they are, and by careful use of the hand the patients think they are receiving great help, and many times we can render in this way, decided and great assistance. While the external examination is of very great importance, and I think it not so difficult to make out the position of the child in the majority of cases, after we have accustomed ourselves, by practice, to this method of procedure as outlined in the paper, I do not think that in my experience I have contributed to a single case of septicæmia in a case of labor, and in fourteen years of practice, with a record of between 400 and 500 obstetric cases. I have never lost a woman in the time of confinement.

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We need not hesitate for a moment in making vaginal examinations if we use proper care in the cleansing of our hands and in the cleansing of the vaginal canal and the vulva, and the latter point is one where we should be very thorough and careful. In my opinion the trouble is not caused by our hands in themselves,—it is by carrying some of the septic secretions from the labia or from the vaginal canal into the uterus.

Dr. C. W. Peck:—I would like to take a vote here—every man in this room in the practice of medicine who makes out a clear and positive diagnosis in cases of confinement so he knows exactly the position of the child, will he please stand.

No one rises.

Dr. H. L. Newell:—In the great majority of cases.

Dr. C. W. Peck:—I want to tell Dr. Strobell who says we poison our patients, that the greatest source of poison is the woman herself. There is no being on the face of God's earth that has so many poisonous elements as a pregnant woman, especially if her liver and bowels are allowed to remain torpid.

Dr. C. W. Strobell—I would reply to Dr. Peck by a question, namely, If the infection was within the woman before labor commenced, why had she not shown signs of septicaemia prior to her confinement? If any of these germs, cocci or paprophites, were in the woman, she would have symptoms of septicaemia. Usually our cases are without abnormal temperature when we go to them. The secretions of the vagina in all women in a normal state are aseptic. We introduce the germs from without.

Dr. O. F. Clough—I think the most dangerous part of a labor is after the child is born. The trouble comes because

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the woman is not properly taken care of after the birth. I was consulted in a case where the woman was delivered of a child the day before; her temperature rose to 105°. I gave her a thorough cleaning out by means of antiseptic douches; the temperature went down to 99 and never went up again. The septic troubles come from not cleaning the woman thoroughly after the child is born.

Dr. C. S. Scofield—Some authorities believe that frequent douching after confinement delays the healing of the lacerated tissues.

Dr. H. H. Swift—I think if I should go and see my patients and should fail to make a vaginal examination to learn the condition of the case they would send for another doctor. I have never felt that vaginal examinations, made with proper precautions, were harmful to patients. On the other hand, I find that women clamor for help. They think you are not doing your part unless you are in some way manipulating the vagina or perineum. I have made it a practice in some cases to press around the buttocks near the perineum, to give them the feeling that something was being done to help them.

Dr. F. E. Clark—The statement brought up of a patient being infected by the normal secretions of the vagina, I cannot agree with. Infection always comes from without. That point has been fully demonstrated by Dr. J. Whitridge Williams of John Hopkins University in an article published in the American Journal of Obstetrics and Diseases of Women and Children, October, 1898. Another point,—I think it is wrong for us to sit at the side of a patient for hours at a time manipulating the cervix and trying to hasten labor by deceiving our patient that we are assisting. You are not helping, you are increasing the pains, subjecting the woman

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to the danger of disease and death, and untold suffering. If you will use other means,—those of emptying the bladder and rectum, correcting mal-position, and giving a sitz bath, you will find these all very helpful. The cervix will take care of itself and labor will progress more easily. I would like to state that in Prof. Leopold's clinic in Dresden, a great many cases of labor are conducted without a single vaginal examination. I don't make a plea against vaginal examination, for it has its important place, and should be employed under certain conditions and at the proper time. I think Dr. Peck misunderstood a part of my statements with reference to stretching the cervix during the early stages of dilatation. At such a time I consider it criminal in a normal labor though progressing slowly. To make a diagnosis that labor has begun without a vaginal examination, we must bear in mind the premonitory symptoms of labor, as well as the actual symptoms. Premonitory symptoms are usually manifested two weeks before actual labor. They are sinking of the uterus, relief of cough and dyspnoea, frequent desire to evacuate the bladder and bowels, a slight show, and a few intermittent pains, and the woman thinks she is in labor. By the third manipulation we find that the presenting part has not engaged, and you know that labor has not commenced unless you get the positive signs of actual labor which are familiar to you all. The advancement and progress of labor may be ascertained by the vaginal examination. The other positive signs, together with the external examination, will help to ascertain in normal conditions that labor has actually begun or that it has not. I do not always conduct my confinement cases without making occasional vaginal examinations; but I have conducted a few cases without a single vaginal examination.

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Rupture of the Uterus During Childbirth.

By L. H. Hemenway, M. D., Manchester.

In the early morning hours of May 18, '86, an urgent summons came to me from Dr. Slocum of Dorset for help in a difficult case of labor. A long ride of fully 10 miles brought me to East Rupert at about 2 a. m. The patient, as I learned from Dr. Slocum had called him the evening before and labor was progressing in a satisfactory manner until sometime after midnight, when the pains suddenly stopped and he found the woman with a pulse of 120 and the pulse beat was weak and without resistance. Unable to account for this sudden and alarming change the doctor gave stimulants freely and cautiously gave ergot. There was apparently no response to this treatment and after a short time I was sent for. The woman was found quite weak with a quick pulse that was easily shut off by compression and with countenance pale and anxious.

Examination showed the head engaging in the upper strait of the bony pelvis and the bones of the head very firm. After hasty conference with Dr. S. it was determined to use forceps. Fearing to use chloroform in her condition, stimulants and quinine were given and an attempt was made to apply the forceps. This failed because the 2nd blade could not be passed without using more force than seemed best. Efforts were then directed

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toward strengthening the patient by giving quinine and morphine and stimulants. While waiting for increase of strength it was decided to send for more help and a messenger was sent for Dr. Clemons who arrived about 3:30 a. m. After his coming it was decided to try. to put on forceps again and failing in that to perform craniotomy.

Dr. Clemons tried to apply the forceps and failing, I made a second attempt before resorting to perforating the head. There was no success and then Dr. Slocum gave chloroform and ether. When an effort was made to perforate the head, it receded from the thrust and almost at the same moment Dr. C. said "just put your hand here" and apparently just beneath the abdominal walls was felt the arm and shoulder of the child. Finding that I could still reach the head and make out the sutures plainly, Dr. C. was asked to hold the child steadily as possible and another attempt was made to perforate the head resulting in the slipping upward of the head and nothing could be felt of the child per vaginam. Something had to be done at once and it was deemed best to try to reach the child and deliver by turning. Abdominal section was not considered best under the circumstances.

So, after the proper cleansing of hand and arm and smearing with vaseline the, hand was introduced and the first thing found was the placenta which was detached and lying loose in the vagina—removing it and hastily tying the cord and cutting it off, the cord was used as a guide toward the child, the arm was pushed upward carefully until the elbow was just within the labia and the body of the child could be reached. By careful traction on cord to steady the body of the child and by persistent and careful pulling downward on the body, the thighs were at last reached

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and after a short time the knees were hooked by the fingers and turning was then easily accomplished. By carefully making traction the body of the child was drawn downward and after about an hour from the first attempt to perforate the head, we had the satisfaction of seeing the delivery completed. The child was large and well formed. The weight cannot be given. There was no hemorrhage to cause anxiety, unless there was internal bleeding, and as the case went on we felt that there was no concealed hemorrhage. The effort made to deliver the head caused severe and long pressure on the vagina and urethra and during convalescence there was developed a small slough of the urethra which howeyer healed kindly, leaving the canal pervious—a vesico vaginal fistula was unfortunately one result of the case. After the delivery of the child the mother was much exhausted and the outlook for her recovery was bad. Dr. C. and I left the house expecting to hear of her death during the day for the pulse was very weak and rapid, but on the 20th a summons came from Dr. Slocum to see the case again and to my surprise the patient was so much stronger that there was a first-rate fighting chance for life. The details of the case from this time I cannot give—nor can I give any record of temperature, pulse-rate or special treatment. The careful and unremitting attention of Dr. Slocum who stayed night and day for 14 days, and the loving care of three sisters was rewarded by a complete return to health, with the exception mentioned before of a vesico-vaginal fistula. Dr. S. informs me that at the end of the third week the patient could sit up for a short time and the fourth or fifth week he took her over the mountain to her mother's home for a rest.

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We called the case one of rupture of the uterus. It was not recognized until the second attempt to perforate the head had resulted in showing the child beyond reach.

DISCUSSION.

Dr. H. H. Swift—This subject and this paper is of special interest to me. The happy termination of the case was something to be congratulated over and something not to be anticipated in the future. The rupture of the uterus, I understand, is perhaps more frequently due to the use of ergot than any other cause. I have never seen any statistics to show the frequency with which it occurs,—and as far as the treatment is concerned at the present time, I think we should make a prompt abdominal incision and remove the foetus. I should like to ask the doctors present if they have had any experience in this line.

Dr. C. S. Scofield—I knew of such a case where ergot had been administered resulting in the death of both mother and child. I also knew of another case where ergot had been administered previous to delivery followed by the death of the child, and a severe tear in the neck of the womb up to the body, which was followed by severe inflammation and all its accompanying symptoms, lasting for several months. It is my practice never to give ergot before the uterus is empty. I would like to ask Dr. Hemenway if ergot was given previous to the rupture of the uterus in his case.

I believe no physician should practice obstetrics who has not sufficient time or inclination to await the process of nature without resorting to artificial means, like the giving of ergot or the application of the forceps. The latter, I believe, should not be used save in those cases where necessity

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requires, in the interest of either mother or child. How many women are suffering to-day who would otherwise be strong and well if instruments had not been used or ergot given to hasten delivery for the sole purpose of saving time.

Dr. C. W. Strobell—It seems to me that if there was a rupture of the uterus, unless there was a phenomenally small amount of hemorrhage in the case, that there would have been symptoms in addition to those present in Dr. Hemenway's case. If there were faintness, blindness, sighing respiration, pallor, clammy surface,—all marked symptoms of blood loss, the proper treatment of a case invariably should be to quickly open the abdomen, deliver the child, clamp the uterine and ovarian arteries, and amputate the uterus at the neck.

Dr. C. W. Peck—We know that ergot controls hemorrhages in the system; wouldn't it help control a hemorrhage after rupture of the uterus?

Dr. H. H. Swift—Speaking of the use of ergot, I have times of using it and of not using it in my obstetric practice. In the last 15 years I have used it in say one case out of five, with good results. I use it for lagging and insufficient pains, one teaspoonful in a glass of water with a dose of one tablespoonful every 20 minutes until the pains are more pronounced. In that way I have given it with very satisfactory results.

Dr. F. E. Clark—It is only fair in discussing the use of ergot that we take statistical reports from several thousand cases where accurate records are kept, as well as in the few cases that have come within our knowledge. In my obstetric practice I use but very little ergot. I never use it until the uterus is empty, and then only to secure uterine contraction. If it was a safe thing to use in the early stages to dilate the

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cervix, it would be employed by our best obstetricians, and they would so recommend. On the contrary they very strongly condemn the early administration. If the pains are weak and the cervix not dilating, I prefer to give a Dover's powder or a small dose of morphine, and let the patient get some rest and strength, and you would be surprised with the result. Emptying the bladder and rectum, following with a sitz bath often hastens labor. I think ergot is dangerous, and I do not employ it at all, unless to obtain more complete uterine contraction if I do not secure the same by external manipulation. Crede [1].

Dr. L. H. Hemenway—As to whether ergot was used before the rupture, I am not able to state. I think it was not. Everything seemed to be progressing in a natural way; pains were coming on rapidly and with sufficient force and the doctor was satisfied with the condition of his patient until this occurred. Before sending for me he gave some ergot to bring back the pains. The patient was found in a pale, weak condition; her pulse was rapid, not less than 120; I did not believe she would pull through; I could not tell what the trouble was. The head was in the superior strait, I could reach it with my finger; I made an effort to use the forceps; made several efforts with all the force I thought best to use, but with no satisfactory result.

In regard to ergot, I have always used Squibbs' or Parke, Davis & Co.'s preparations, which I have found the best. Sometimes in my cases I am not engaged beforehand, but when I am and can see my patient a month before confinement, I give fluid extract of blue cohosh, 20 drops three times a day. It is a good help in preparing the uterus for labor. If the patient cannot take 20 drops of blue cohosh without causing headache, lessen the dose to the amount that can be well borne; sometimes 10 drops three times daily is the proper dose.

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Obituary of Lyman Rogers, M.D.

By Dr. A. S. M. Chisholm of Bennington.

Lyman Rogers was born in Tinmouth, Vermont, November 10, 1832. He came of old New England stock, his father being born in Marshfield, Mass., the home of Daniel Webster, from which he came to Vermont shortly before the birth of the subject of this sketch.

Dr. Rogers spent the usual early years of his life in the district school, from which he went as a lad to Black River Academy at Ludlow and thence to Castleton Seminary. In 1856, being 24 years of age, he attended one course of lectures in the Castleton Medical College and subsequently he studied for two terms in the Medical department of the University of Vermont. Here he took his degree of M. D., and in January, 1859, settled down to the practice of medicine in Shaftsbury, Vt.

Here for 24 years he lived the laborious life of a country practitioner. The long night drives in mud and rain, the irregular life, the uncertain hours of rest, the absence of intellectual companionship; the dirty, grumbling, ungrateful patients; the unmerited enmities, the unworthy friendships—a man must be a fine, strong man who after 24 years of such degrading life is not himself lowered. He must needs have in his "mind such stores as silent thought can bring."

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In 1883 Dr. Rogers became associated with Dr. Morgan of Bennington as he was formerly for several years associated with Dr. Newton of North Bennington. He removed to the former village and continued to reside and practice medicine in that community during the rest of his life.

He was a member of the Vermont State Medical Society, its president even in 1897-'98, and of the Blue Lodge of Masons; and was associated with the local Health Board and the Board of School Trustees of Berlin for several years. A man of exceptional natural abilities his mind became every year stored with the results of large experience and of acute observation. In the sick room his manner was grave and his words comforting. He possessed in a considerable degree the confidence of his patients and impressed their friends with his familiar acquaintance with disease and its treatment. His life was given up almost entirely to his profession. Outside of its requirements he had few temptations to dissipate his energies in diverse channels of thought and speculation. So absolutely did he devote himself to his patients that as he told me shortly before his death he had never taken a week's vacation from his practice since he began it.

During the last few months of his life I conversed with him freely about himself. He narrated to me his symptoms, which during the fall of 1899 evidently presaged his demise, and I told him one day he had better let me examine his urine carefully and ascertain its condition. I was much impressed by his refusal to learn anything of his condition. I think he dreaded the certain knowledge of his ailment. It was manifestly Bright's Disease and I am confident that he often answered night calls when he

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himself was much more in need of rest and advice and treatment than the patients he visited.

On January 23, 1900, while I was myself in bed in the hospital, the matron came in one morning and told me that Dr. Rogers had died the day before. He had seen some patients during the day and late in the evening walked slowly from his office to the post office and drug store, when, feeling his strength rapidly failing, he crawled home, lay down on his office couch and quietly and peacefully passed away.

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Obituary of E. F. Upham, M. D.

By George Davenport, M. D., E. Randolph.

One by one old age and disease comes to and singles out a member of our fraternity, takes him away and we see him no more.

Edward Fisk Upham, only son of Denslow and Adah (Richardson) Upham was born in Warren, Washington County, Vermont, January 29th, 1825. He attended school at Warren and Waitsfield and in 1855 he was graduated from the Castleton Medical school, Castleton, Vt. He began the study of medicine with his uncle, Dr. Luther Kent, in Lincoln, Vt.

Dr. Upham began the practice of medicine some years before graduating, practicing in Lincoln and Ripton and in fact opened an office in Pittsfield several years before receiving his diploma and was known as the "Boy Doctor" in all that region. He was a man of unusual ability and possessed at that time much medical knowledge or he would have failed miserably.

"The reason for his not getting his diploma at an earlier date was not owing to any lack of readiness on his part, but to some circumstances connected with the medical school."

"His first home was established in 1847 by his marriage with Miss Orlana Dodge of Lincoln and continued till her death in 1884. One daughter graced their home

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for "nineteen beautiful years" and one son outlives the father and is now engaged in mercantile business in Cincinnati, Ohio.

Dr. Upham practiced medicine in the town of Pittsfield nine years, in Rutland one year and in Randolph forty years. He commenced the practice of medicine in 1837 while a student, thus making his medical life about fifty-two years. "During a period of three years living in Alabama, he became a member of that State Association and was successful in persuading two or three able medical men to join the American Medical Association," of which he had been a member for many years. He was also a member of the White River Valley Medical Association and was an active member in all the medical societies he attended. In this connection it is proper to make mention of his great interest in such societies and he deplored the indifference manifested by young and old physicians alike to joining medical societies and felt that they lost much in not joining. Dr. Upham was a believer in the germ theory of disease and the subject of preventive medicine was of great interest to him. There was no quackery about Dr. Upham. He despised it. His highest ambition was to have his medical opinion worth something, consequently his cases were reported correctly.

His judgment on a patient was very good indeed, unusually good. He was a man among men in the medical profession, honorable and straightforward in his deal with them and with all the world. He made a success of his profession which is enough to satisfy the ambition of any medical man. He was a good practitioner of medicine or he could not have retained year after year his many patrons. Physically strong and mentally able, he was

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amply equipped for any emergency he might meet in a country practice. He possessed decided opinions of his own on all matters appertaining to the Church, State or Medicine. He investigated for himself. He served on the pension board of examining surgeons for a period of 26 years. He was elected president of this society in 1871, serving one year. In December, 1890, he was united in marriage to Miss Emeline A. Tewksbury, of Randolph, who survives him. After the first attack of apoplexy he lived about ten and one half months, dying from effects of a second shock, on the 15th day of April, 1900.

Dr. Upham lived 75 years, 2 months and 15 days—a long, useful and honorable life.

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Obituary of E. H. Pettengill, M. D.

By E. S. Allbee, M. D., Bellows Falls, Vt.

Edward H. Pettengill, M. D., son of Jonathan and Sally Barrett Pettengill, was born May 14, 1837, in Grafton, Vt., where his boyhood was spent in working on the farm and attending the common schools of the town. Later he entered Middlebury College, which he left to enlist as Hospital Steward in the 16th Vermont Regiment, August 24, 1862.

After his return from the army he commenced the study of medicine with Dr. Daniel Campbell of Saxton's River, and then entered the Harvard Medical School, from which he graduated in 1866. He took post-graduate courses at the College of Physicians and Surgeons in New York and at the University of Vermont. He began practice in Saxton's River where he remained until his death February 8, 1900. In 1868 Dr. Pettengill married Rhoda J. Wilder of Keene, N. H., who, with two sons and three daughters, survive him.

Dr. Pettingill was a man whose cordiality, sincerity and faithful performance of all duty won love and respect from those who knew him. He was devoted to his profession and, believing that a doctor never ceases to be a student, he was a very regular attendant at the meetings of the local medical society as well as of the state and national societies, of which he was a member. He was a

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physician who, I think, took as great an interest in his patients as anyone whom I know. The weather was never so bad or the roads so rough as to prevent his making his visits. Many a time, when a case was especially severe, although he much needed rest after a hard day's work, I have known of his driving five or six miles and remaining all night to be ready for any emergency that might arise. One of the hardest trials for him during his last illness was having to refuse to answer the calls of his old friends and patients. However, with all his love for his profession, he found some time to devote to the welfare of the town and all public improvements. The church to which he belonged and the village schools received a large share of his attention. He held several state and town offices; he was a trustee of the Public Library, superintendent of Schools, Health Officer, State Supervisor of the Insane, and Pension Examiner for fourteen years.

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Obituary of Dr. C. M. Terrill.

By T. F. Gartland, M. D., White River Junction.

Clarke Mead Terrill was born in Underhill, Vt., December 17th, 1845, the fifth of a family of ten children, born to Silas H. and Sophronia (Bicknell) Terrill.

His early education, like that of most farmer lads, was obtained in the district schools of his native town. Later he attended the Academies in Underhill Center and Williston, Vt., but, finally gave the finishing touches to his education in the Normal School at Johnson, Vt.

Morally, physically and intellectually armed, he launched out on the sea of fame and tried his arm and brain at various occupations: farming, teaching, clerking, selling pumps and as a sewing machine agent, until at last he settled down to the study of medicine.

He graduated from the Medical department of the University of Vermont in the class of '77 and immediately began to practice his profession in Grafton, Vt. His roving nature was not to be so easily conquered, and he soon moved to Townshend, Vt., thence to White River Junction, Vt.

On September 11, 1878, he married Miss Mary Grace Cone, eldest daughter of the late George E. Cone, of Hartford, Vt. Two daughters, Grace and Louise, were born to them.

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The doctor was now on the road to prosperity when, over him came a shadow, and his admirable and esteemed wife was taken away, March 28, 1895. The death of his helpmate was the beginning of his own health breaking down and the doctor was never the same again.

On October 12th, 1897, he married Miss Althia Bemis of Wardsboro, Vt., and went South where he purchased a home with the hope of recovering his health and strength. This he succeeded in doing only to a limited degree, and once more he returned to his former home in White River Junction, Vt. It was not his intention to resume the practice of medicine, but his many former patients called upon him and he took it up, but his stay among them was short and he found that he must soon return to his adopted home in the Southern Pines of Georgia to spend the remainder of his mortal life. However, the time of the doctor's labors had nearly lapsed, and soon the grim hand of death laid hold on that which we all hold dear, and Dr. Terrill was no more.

He passed away in Tallapoosa, Ga., April 7th, 1900, in the 55th year of his life, survived by his second wife and two daughters, Mrs. John T. Paul of Wilder, and Miss Louise Terrill of Hartford.

His remains were brought to White River Junction and interred with Masonic rites in the family lot in Hartford cemetery.

Dr. Terrill was a man of irreproachable character and indefatigable zeal. A firm believer in early counsel, he always gave his patients the whole benefit of all medicine could afford. Reared on a farm he never stopped until the high calling, that of laboring for others, was reached. By his persistent efforts and saving habits, he accumulated

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considerable property. His kindly disposition and agreeable manners won for him a host of friends. As a citizen he was ever on the side of right and did much to help the down-trodden to a better life. As a fellow practitioner of medicine, one could ask for none better. He was liberal in his views and expressed them freely. Many a poor mortal owes his life to him, and those whose large bills were receipted for a pittance will always remember the late Dr. C. M. Terrill.

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CONSTITUTION AND BY-LAWS

OF THE

Vermont State Medical Society

(As revised October, 1892, and amended October, 1895, 1896, 1897, 1898 and 1899.)

CONSTITUTION.

ARTICLE I.—NAME.

This Society shall be called the Vermont State Medical Society.

ARTICLE II.—OFFICERS.

The officers of this Society shall be a President, Vice-President, Secretary, Treasurer, Auditor, Publication Committee of three members, of which the Secretary shall be chairman, Executive Committee of three members, of which the Secretary shall be one *ex-officio*, a Committee on Necrology of three members, a Committee on Membership of three members, a Committee on Legislation of three members, and a Board of License Censors, consisting of three members, all of whom shall be elected annually at the opening of the second day's session, by ballot when demanded by any member present (except the Committee on Membership, which shall be elected at the morning session of the first day), or in such other manner as the Society shall direct, and shall hold their respective offices

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until the close of the next annual meeting, and until others are chosen.

ARTICLE III.—MEETING.

There shall be an annual meeting of this Society held on the first Thursday and Friday after the second Wednesday in October, at such place as shall be designated by vote, at the previous annual meeting.

ARTICLE IV.—MEMBERSHIP.

Any physician residing within the State, who is a graduate of a regular recognized Medical School, may become a member of this Society at any regular meeting, upon recommendation of the Committee on Membership and vote of the Society, by signing the constitution and paying the sum of three dollars to the Treasurer.

ARTICLE V.—DISCIPLINE.

Any member of the Society guilty of intoxication, unprofessional or irregular practice, or of gross immorality, or for other good reasons, may be expelled or suspended from the Society by a vote of two-thirds of the members present at any annual meeting.

ARTICLE VI.

This Constitution may be repealed, altered or amended at any annual meeting, by a vote of two-thirds of the members present, provided such repeal, alteration or amendment be proposed at a previous annual meeting.

ARTICLE VII.

This Society may adopt such By-Laws, not repugnant to this Constitution, and may repeal, alter or amend the same, in such manner, as a majority at any annual meeting may deem proper.

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BY-LAWS.

ARTICLE I.—Duties of Officers.

Section 1. The President shall preside at all meetings, and perform all the duties incident to such office. He shall deliver, or cause to be read, an address or dissertation on some medical subject at the annual meeting at which he presides.

Sec. 2. The Vice-President shall preside in the absence of the President, and perform all his duties and possess all his privileges. He shall deliver, or cause to be read, at the opening of the afternoon session, on the first day of the annual meeting, an address on medicine or surgery.

Sec. 3. The Secretary shall keep a record of the proceedings of the Society, and of the members present at each meeting; shall arrange and publish the program at least two weeks before each meeting; shall conduct the correspondence; shall procure a stenographer to report the proceedings of each meeting; and shall have his necessary expenses defrayed from the funds of the Society. He shall, if unable to attend the meeting of the Society, personally, send the records to some member in attendance. He shall receive an annual salary of fifty dollars.

Sec. 4. The Treasurer shall collect and disburse all moneys of the Society, agreeably to their directions, and make report of his doings to the Society at its anuual meeting.

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SEC. 5. The Auditor shall examine and verify the accounts of the various officers.

SEC. 6. The Executive Committee shall make selection of a subject or subjects for the program and appoint a Committee of Arrangements of three members, for the next ensuing meeting ; shall make assignments of parts to any of the members, as in their judgment they think advisable, and report the same to this meeting and to each and every subsequent meeting.

They shall make such other arrangements for the meetings of the Society as they shall deem essential for its best interests.

SEC. 7. The Committee of Arrangements shall be residents of the town where the meeting is to be held. They shall make arrangements for the place of meeting, for a banquet on the evening of the first day and for space for medical and surgical exhibits and such other local arrangements as they may deem essential for the success of the meeting.

SEC. 8. The Publication Committee shall receive all papers referred to them by the Society, and as soon as possible subsequently to the annual meeting of the Society, shall publish such of those papers as they may deem best suited to promote the interests of the profession and the public good, under the title, Transactions, and perform all other appropriate duties.

SEC. 9. The duties of the Committee on Membership shall be to examine the credentials and qualifications, with reference to their method of practice, etc., of persons desirous of becoming members of the Society, and present at each meeting the names of such, as in their opinion, are eligible to membership under the Constitution and Regu-

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lations of the Society. They shall recommend for membership, only such physicians as shall present to them their diplomas, or a certificate in writing signed by some member of the Society in good standing, stating that he has personal knowledge that said applicant has a diploma of a regular medical school.

SEC. 10. The Committee on Necrology shall report the names of deceased members and shall cause to be prepared such brief biographies as may in each case be deemed best.

SEC. 11. It shall be the duty of the Board of License Censors to issue license certificates to regular physicians wishing to practice medicine in this State, in accordance with the State law regulating such practice.

SEC. 12. It shall be the duty of the Committee on Legislation to receive and examine all resolutions or proposed laws or acts pertaining to medical legislation, which may come up at any meeting, and to report on the same at the meeting then in session; also to have charge of all legislative business of the Society which may properly come before the Legislature for enactment, as the Society may direct.

ARTICLE II.—DUES.

SEC. 1. Every member of this Society (honorary excepted) shall pay to the Treasurer an annual fee of three dollars.

SEC. 2. Any member who shall fail to pay his dues for a period of three years shall be dropped from the Society, and his name stricken from the roll of membership, and he shall be so notified by the Treasurer.

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SEC. 3. Any member who has been dropped from the Society for the non-payment of dues may be reinstated by paying all arrears, or re-elected after any number of years by a vote of three-fourths of the members present at any regular meeting upon payment of three years arrearages.

SEC. 4. No member shall receive the Transactions unless his dues are paid for the fiscal year or years, for which they are issued.

ARTICLE III.—HONORARY MEMBERS.

The Society may elect at each annual meeting, not more than two honorary members, non-residents of the State, who shall have the same privileges as ordinary members, except that they shall not be eligible to office, nor have the right to vote.

ARTICLE IV.—DELEGATES.

Delegates shall be appointed annually to represent this Society in the American Medical Association; the Medical Department of the University of Vermont and of Dartmouth College at the examination of candidates for graduation, and credentials shall be issued to such delegates by the Secretary when he is duly notified of the time and place of such examinations; the Connecticut River Valley Medical Society; the White Mountain Medical Association; the White River Valley Medical Association; the State Medical Societies of the New England States, together with those of New York, and such other States and Societies as the mutual interests of the Societies may direct.

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In cases where delegates are unable to attend to the duties of their appointment, it shall be their duty to notify the Secretary of such inability, and the Secretary and President shall appoint others to supply their places.

ARTICLE V.

One member of the Society shall be appointed by the Secretary to open the discussion on each paper to be presented at any meeting.

ARTICLE VI.

Any member wishing to withdraw from the Society shall be permitted to do so on his written request after he shall have presented the Treasurer's receipt for all moneys due.

ARTICLE VII.

The Constitution and By-Laws, together with the names and residences of the members in good standing shall be published in every volume of the Transactions.

ARTICLE VIII.

The names of the deceased members of the Society, with the dates of birth, graduation, admission to membership, death and such other items in brief, of personal history, as may seem desirable to the Committee on Publication, shall be printed in each copy of the Transactions, under the caption, "In Memoriam."

ARTICLE IX.

No author shall consume more than twenty minutes in reading or presenting a paper, and no one shall speak more than five minutes in the discussion of a paper, without unanimous consent of the members present.

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ARTICLE X.

All addresses and papers presented to the Society, thereby become its property and shall be placed in the hands of the Secretary, within one week after the meeting for insertion in the Transactions.

ARTICLE XI.

The Program as prepared by the Executive Committee and published in accordance with the By-Laws by the Secretary, shall constitute the order of business, and cannot be changed nor suspended, except for a definite purpose, a limited time and by a two-thirds vote of the members present.

ARTICLE XII.

Any member not present, or not ready to respond, when his name is called, shall forfeit his position on the program.

ARTICLE XIII.

The Committee of Arrangements of each annual meeting, shall grant the privilege of exhibition, under the auspices of the Society, only to such pharmaceutical preparations as are recognized by the United States Pharmacopœia, or are not protected by trade mark, secrecy of preparation or other exclusive proprietorship.

RESOLUTION

Having the force of a By-Law, adopted 1899:

Resolved, That the Treasurer is authorized to pay the necessary expenses of the members of the Board of License Censors, for travelling, printing, postage, etc., incurred by them in the performance of their duty.

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List of Members.

Allard, O. H. ..... Burlington
Allbee, E. S. ..... Bellows Falls
Allen, C. E. ..... Swanton
Allen, Lyman ..... Burlington
Andrews, B. J. ..... Burlington
Avery, J. W. ..... Proctor
Bailey, E. H. ..... Graniteville
Baker, O. C. ..... Brandon
Barker, Anna E. ..... Burlington
Barrows, H. W. ..... Stowe
Bartlett, C. W. ..... East Dorset
Belden, G. W. ..... Essex
Bellrose, J. H. M. ..... Burlington
Bellrose, A. H. ..... Rutland
Berkley, G. C. ..... St. Albans
Bidwell, G. S. ..... Waitsfield
Bingham, A. L. ..... Williston
Bingham, L. M. ..... Burlington
Bisbee, A. B. ..... Montpelier
Blodgett, J. H. ..... Saxtons River
Breitling, J. C. ..... Lunenburg
Brewster, J. D. ..... Windsor
Brigham, C. W. ..... Pittsfield
Brigham, F. L. ..... Pittsfield
Brown, E. M. ..... Sheldon
Brown, C. A. ..... Ludlow
Brown, E. T. ..... Montgomery

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Bryant, W. N. . . . . Ludlow
Buffum, J. H. . . . . Wallingford
Bugbee, A. G. . . . . Derby Line
Burbank, L. W. . . . . Cabot
Burnett, D. L. . . . . South Royalton
Burr, C. H. . . . . Montpelier
Bushnell, E. H. . . . . Jeffersonville
Camp, C. F. . . . . Barre
Campbell, C. M. . . . . Rochester
Campbell, E. R. . . . . Bellows Falls
Carpenter, F. W. . . . . West Rupert
Caverly, C. S. . . . . Rutland
Chaffee, H. S. . . . . Rochester
Chandler, C. E. . . . . Montpelier
Chandler, M. L. . . . . Barre
Chapman, B. A. . . . . Springfield
Chase, R. M. . . . . Bethel
Cheeney, A. A. . . . . Lyndonville
Chisholm, A. S. M. . . . . Bennington
Church, W. G. . . . . Burlington
Claflin A. A. . . . . Burlington
Clark, E. R. . . . . Castleton
Clark, F. E. . . . . Burlington
Clarke, J. M. . . . . Burlington
Clough, O. F. . . . . Wells
Colby, B. D. . . . . Whiting
Courtney, J. W. . . . . Burlington
Crandall, H. A. . . . . Burlington
Crain, M. R. . . . . Rutland
Darling, S. E. . . . . Hardwick
Darrah, A. J. . . . . Enosburgh Falls
Davenport, George . . . . . East Randolph

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Davidson, A.....St. Albans
Delehanty, N. J.....Rutland
Deziel, J. S.....Barre
Dinsmore, H. H.....Brattleboro
Doane, C. B.....Springfield
Dunsmore, George.....St. Albans
Dyer, O. G.....Brandon
Eddy, M. H.....Middlebury
Edmunds, G. F.....Bristol
Ellis, E. E.....Brookfield
Erwin, C. L.....Newport Center
Foster, G. S.....Putney
Fox, G. H.....Rutland
Gartland, T. F.....White River Junction
Gay, F. C.....Windsor
Gibson, John.....Vergennes
Gillette, L. H.....Wilmington
Goodall, F. W.....Bennington
Goodall, W. L.....Montpelier
Gorham, G. H.....Bellows Falls
Goss, R. J.....Hartford
Gray, F. S.....Troy
Greene, L. M.....Bethel
Greene, O. D.....Bethel
Griffin, C. E.....Fair Haven
Grinnell, A. P.....Burlington
Hamilton, J. H.....Richford
Hamilton, J. M.....Rutland
Hammond, H. W.....Rutland
Hanrahan, J. D.....Rutland
Harkness, W. R.....Montpelier
Havens, W. L.....Chester Depot

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Hazelton, W. F ..... Bellows Falls
*Heath, W. L. ..... Richmond
Hemenway, L. H ..... Manchester
Hill, A. S. C ..... Jericho Center
Hill, J. S ..... Bellows Falls
Holcombe, L. C. ..... Milton
Holton, H. D ..... Brattleboro
Hooker, E. G ..... Waterbury
Howard, C. W ..... Shoreham
Howard, J. A ..... Swanton
Howe, H. T. J ..... Waitsfield
Hulburd, G. B ..... Jericho
Hubbard, L. W. ..... Lyndon
Hull, H. F. ..... Proctorsville
Huntington, W. D. ..... Rochester
Huntington, W. M ..... Rochester
Hyde, W. B ..... Bakersfield
Ide, H. C ..... St. Johnsbury
Jackson, F. K ..... Burlington
Jackson, J. H ..... Barre
Jackson, J. W ..... Barre
Jackson, S. N ..... Barre
Janes, Henry ..... Waterbury
Jenne, J. N ..... St. Albans
Johnson, R. T ..... West Concord
Keenan, J. C. ..... Rutland
Kidder, F. T. ..... Woodstock
Lape, R. ..... Fair Haven
Lawrence, W. E ..... Worcester
Lawton, S. E. ..... Brattleboro

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Lazelle, W. E. ..... Barre
Lewis, H. Edwin. ..... Burlington
Liddle, F. C. ..... Dorset
Manchester, H. S. ..... Pawlet
Manuel, W. S. ..... St. Albans
Marshall, G. G. ..... Wallingford
Marshall, Minnie S. ..... Montpelier
Martin, E. H. ..... Middlebury
Maston, C. H. ..... Alburgh Springs
Matthews, W. C. ..... Bellows Falls
Maynard, S. E. ..... Burlington
McGuire, M. F. ..... Montpelier
McMahon, P. H. ..... Burlington
McSweeney, J. E. ..... Barre
McSweeney, P. E. ..... Burlington
Miller, A. I. ..... Brattleboro
Milliken, C. W. ..... Post Mills
Millington, B. F. ..... South Londonderry
Miner, A. S. ..... Bellows Falls
Morgan E. C. ..... Felchville
Morgan, J. C. ..... Stowe
Nay, W. S. ..... Underhill
Newell, H. S. ..... Rutland
Newton, C. P. ..... Underhill Center
Newton, J. P. ..... Benson
Newton, L. B. ..... No. Bennington
O'Conner, F. H. ..... Bellows Falls
Osgood, F. L. ..... Saxtons River
Osgood, F. L. ..... Townshend
Paige, S. W. ..... St. Albans
Page, F. C. ..... Johnson
Parkhurst, G. D. ..... Fair Haven

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Peck, C. W.....Brandon
Peck, O. W.....Winooski
Pelon, Edward.....Vergennes
Pelton, R. M.....Richford
Peterson, J. A.....Green River
Petty, C. W.....Keeler's Bay, South Hero
Petty, F. A.....Fairfax
Phelps, F. C.....Vergennes
Phillips, W. S.....Arlington
Pierce, W. M.....Newbury
Platt, W. N.....Shoreham
Pond, E. M.....Rutland
Prentiss, R. G.....Johnson
Radike, A. J.....Burlington
Ray, C. W.....Chester
Reed, W. D.....Barre
Richmond, Deane.....Windsor
Richmond, J. S.....Windsor
Roberts, George.....Newfane
Roberts, E. G.....Fair Haven
Robertson, F. D.....St. Albans
Rudden, J. T.....Bellows Falls
Russell, C. J.....Hinesburgh
Scofield, C. S.....Richford
Scott, A. W.....Lunenburgh
Senten, B. C.....Rutland
Sherwin, O. W.....Woodstock
Sherwood, Ralph.....St. Albans
Shipman, E. W.....Vergennes
Skeels, A. A.....Highgate Center
Skinner, R. B.....Barton
Slayton, W. T.....Hyde Park

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Smith, C. C. ..... Gaysville
Stafford, J. M. ..... East Middlebury
Staples, Hall ..... Grafton
Stearns, W. M ..... Rutland
Stickney, O. G ..... Barre
Stiles, T. R. ..... St. Johnsbury
Stoddard, F. R. ..... Shelburne
Stoddard, O. R ..... North Ferrisburgh
Stone, G. H. ..... Forestdale
Stone, B. H. ..... Burlington
Strobell, C. W. ..... Rutland
Sutner, C. N ..... Richford
Swift, H. H ..... Pittsford
Tanner, J. D. ..... Winooski
Thompson, W. N. ..... Brattleboro
Thompson, J. E. ..... Rutland
Tinkham, H. C ..... Burlington
Townshend, H. S. ..... Bridport
Trudell, J. J. ..... Rutland
Twitchell, M. C ..... Burlington
Vincent, W. H. ..... Orwell
Warren, M. D. ..... Cabot
Watkins, H. R. ..... Burlington
Watson, E. B ..... Williamstown
Welch, R. E. ..... Franklin
Wheeler, J. B. ..... Burlington
White, P. P. ..... Williamsville
White, W. J. ..... Addison
Wilder, H. R. ..... Burlington
Willard, A. J. ..... Burlington
Wilson, E. A. ..... Burlington
Wiltse, M. J. ..... Burlington

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*Winship, E. O. ..... Danby
Woodhull, J. B. ..... North Bennington
Woodward, A. T. ..... Brandon
Worthen, H. O. ..... Barre

HONORARY MEMBERS.

		ELECTED.
Conn, G. P.	Concord, N. H.	
Crothers, T. D.	Hartford, Conn	1892
Douglas, O. B.	New York City	1891
Ferguson, E. D.	Troy, N. Y.	1896
Field, A. E.	Barre, Vt.	1890
†Frost, C. P.	Hanover, N. H.	1886
Gordon, S. C.	Portland, Me.	1895
Irish, J. C.	Lowell, Mass.	1894
Kellogg, D. S.	Plattsburgh, N. Y.	1892
Lockhart, F. A. L.	Montreal	1899
Lyon, E. M.	Plattsburgh, N. Y.	1892
Mabon, William	Ogdensburgh, N. Y.	1897
Marcy, Henry O.	Boston	1896
Porter, William H.	New York City	1895
Richardson, Maurice H.	Boston	1899
Rawson, J. B.	Dannemora, N. Y.	1889
Shattuck, Frederick C.	Boston	1894
Stearns, Henry P.	Hartford, Conn.	1899
Watson, H. P.	Haverhill, N. H.	1887

*Deceased.
†Removed from State.

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Society founded in 1814.

List of Presidents

Since 1851.

		Elected.
Goldsmith, M	Rutland	1851
Palmer, B. R	Woodstock	1852
Thayer, S. W., Jr	Northfield	1853
Warner, E. D	New Haven	1854
Perkins, Joseph	Castleton	1855
Carpenter, Walter	Randolph	1856
Stevens, H. F	St. Albans	1857
Allen, C. L	Middlebury	1858
Knights, A. E	Springfield	1859
Morgan, B. F	Bennington	1860
Woodward, A. T	Brandon	1861
Stiles, J. N	Windsor	1862
Bradford, P. D	Northfield	1863
Fassett, O. F	St. Albans	1864
McCollom, William	Woodstock	1865
Warner, E. D	New Haven	1866
Frost, C. P	Brattleboro	1867
Richmond, J. S	Woodstock	1868
Janes, Henry	Waterbury	1869
Putnam, S	Montpelier	1870
Upham, E. F	West Randolph	1871

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Holton, H. D.	Brattleboro	1872
Butler, L. C.	Essex	1873
"	"	1874
"	"	1875
Dunsmore, George	St. Albans	1876
Chandler, C. M.	Montpelier	1877
Bullard, G. B.	St. Johnsbury	1878
Thayer, S. W.	Burlington	1879
Jackson, J. Henry	Barre	1880
Sherwin, O. W.	Woodstock	1881
Bingham, L. M.	Burlington	1882
Clark, S. S.	St. Albans	1883
Draper, Joseph	Brattleboro	1884
Kemp, D. G.	Montpelier	1885
Brooks, S. T.	St. Johnsbury	1886
Campbell, Edw. R.	Bellows Falls	1887
Clarke, J. M.	Burlington	1888
Brown, H. S.	St. Johnsbury	1889
Jenne, J. N.	St. Albans	1890
Caverly, C. S.	Rutland	1891
Wilder, H. R.	Swanton	1892
Bisbee, A. B.	Montpelier	1893
Linsley, J. H	Burlington	1894
Branch, C. F	Newport	1895
Stoddard, F. R.	Shelburne	1896
Rogers, Lyman	Bennington	1897
Lawton, S. E.	Brattleboro	1898
Crain, M. R.	Rutland	1899
Huntington, W. D.	Rochester	1900

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